AIWA®

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XK-009

SERVICE MANUAL

STEREO CASSETTE DECK

• BASIC TAPE MECHANISM : α −6 • TYPE. H, C, E, K, K1, Z

SPECIFICATIONS

Type	Stereo cassette tape deck
Track format	4 tracks, 2 channels
Power supply	**XK-009E, Z** AC 220 V, 50/60 Hz **XK-009K, K1** AC 240 V, 50/60 Hz **XK-009C** AC 120 V, 60 Hz **XK-009H** AC 120 V/220 V/240 V switchable, 50/60 Hz
Power consumption	**XK-009E, K, K1, Z, C** 33 W **XK-009H** 30 W
Frequency response	METAL tape: 20 — 22,000 Hz CrO_2 tape: 20 — 21,000 Hz NORMAL tape: 20 — 20,000 Hz
Signal-to-noise ratio	95 dB (METAL tape dbx NR ON)
Wow and flutter	0.035% (According to DIN 45500) 0.018% (WRMS)
Tape speed	4.8 cm/sec. (1-7/8 ips)
Recording system	AC bias (frequency 105 kHz)
Erase system	AC erase
Motor	System servomotor (for the capstan) × 1 DC motor (for tape take-up during playback/recording) × 1 DC motor (for F FWD/REW) × 1
Playback head	PC-OCC coil pure amorphous head
Recording head	PC-OCC coil pure amorphous head
Erase head	Double-gap sendust head
Inputs	REC/LINE IN, CD/DAT DIRECT IN maximum input sensitivity: 50 mV (47 kΩ)
Outputs	PLAY/LINE OUT standard output level: 530 mV (0 VU); suitable load impedance: over 47 kΩ. PHONES: 1.5 mW (8 Ω)
Dimensions	469 (W) × 136 (H) × 432.7 (D) mm
Weight	10.2 kg

- Design and specifications are subject to change without notice.
- Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.
- Dolby and the □□ symbol are trademarks of Dolby Laboratories Licensing Corporation.

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DISASSEMBLY INSTRUCTIONS

1. Mechanism ASSY Removal

1) Remove side wooden panels R/L and the steel cabinet.

2) Remove 2 screws and take out the stabilizer solenoid. (See Figure-1)

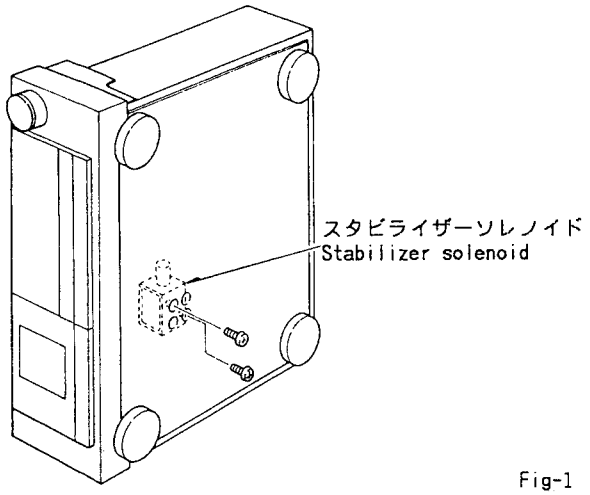


Fig-1

3) Remove the cassette lid in the direction of arrow ①. Remove 6 screws and lay out the wires, then remove the front cabinet in the direction of arrow ②. (See Figure-2)

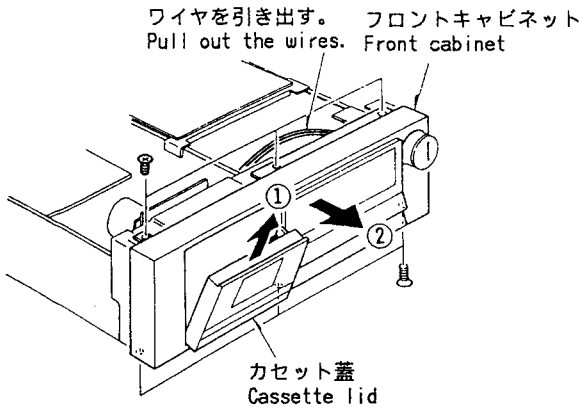


Fig-2

4) Remove 5 screws and push button (EJECT), then pull out the mechanism ASSY in the direction of the arrow. Take care of the hook of the lever plunger ASSY at this time. (See Figure-3)

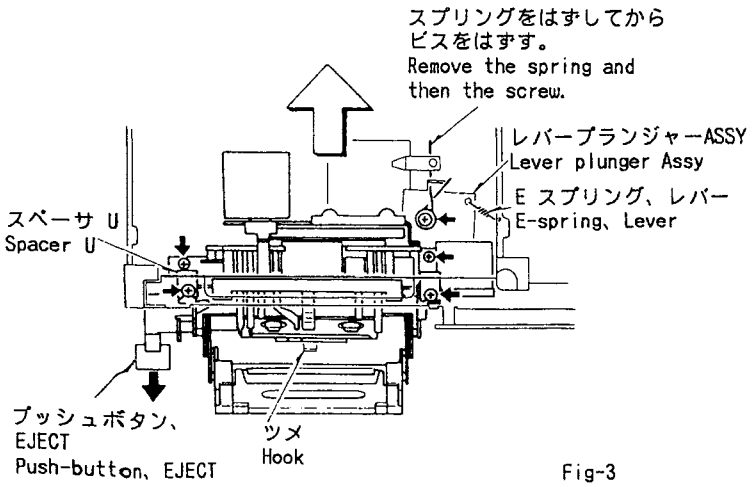


Fig-3

2. Cassette Holder Removal

1) Remove 2 screws in the EJECT state and then remove the holder in the direction of the arrow. Be carefull that the lever (EJECT) is also removed at this time. (See Figure-4)

2) Turn on SW103 and SW107 to operate the mechanism in this state.

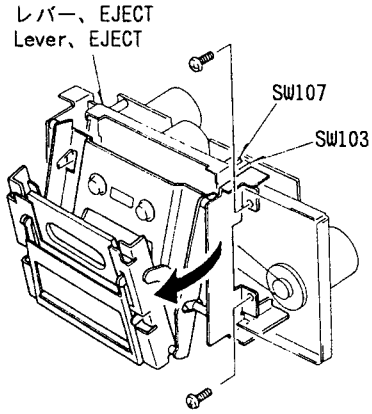


Fig-4

3. Main-2 C.B Removal

1) Remove 4 screws and lift the main-2 circuit board. (See Figure-5)

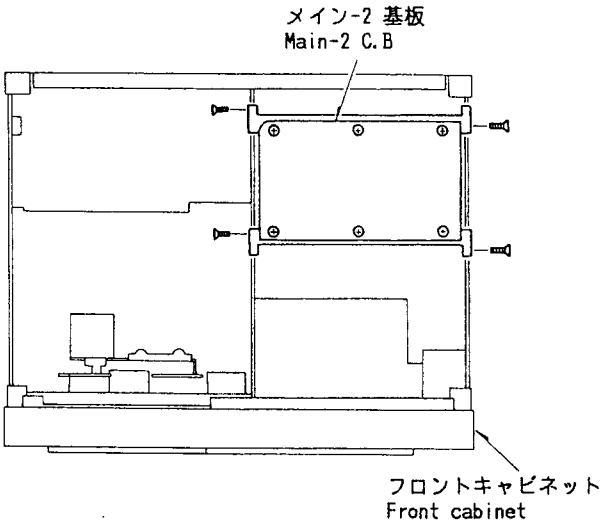


Fig-5

ELECTRICAL MAIN PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
=== IC ===		
	87-001-384-010	IC,CX20188
	82-226-645-010	IC,HD614042S-A87
	87-020-111-010	IC,L78M05
	87-020-877-010	IC,LC4966
	82-100-630-010	IC,LC6502B-724
	87-020-533-010	IC,M4069UBP
	87-020-679-010	IC,M4572BP
	87-027-895-010	IC,M5218L
	87-001-383-010	IC,M5220P
	87-020-619-010	IC,M5238L
	87-027-909-010	IC,M54523P
	87-001-387-010	IC,M5F78M10
	87-020-871-010	IC,M5F78M12L
	87-001-388-010	IC,M5F79M10
	87-020-884-010	IC,M5F79M12L
	87-027-940-010	IC,NJM2903S
	87-020-052-010	IC,NJM4556S
	87-027-986-010	IC,NJM4560S
	87-027-937-010	IC,TC4030BP
	87-001-385-010	IC,UPC1252H2
	87-001-386-010	IC,UPC1253H2
=== TRANSISTOR ===		
	82-371-625-010	FET,2SK30
	89-109-521-010	TRANSISTOR,2SA952K
	89-110-155-010	TRANSISTOR,2SA1015 GR
	89-210-154-510	TRANSISTOR,2SB1015Y,G
	89-309-455-010	TRANSISTOR,2SC945L,Q
	89-309-456-010	TRANSISTOR,2SC945L,P
	89-318-155-010	TRANSISTOR,2SC1815 GR
	89-318-464-510	TRANSISTOR,2SC1846R,S
	89-320-011-010	TRANSISTOR,2SC2001K
	89-321-204-010	TRANSISTOR,2SC2120Y
	89-331-138-010	TRANSISTOR,2SC3113B
	89-412-753-410	TRANSISTOR,2SD1275
	87-026-206-010	TRANSISTOR,DTA124EF
	87-026-216-010	TRANSISTOR,DTA124ES
	87-026-215-010	TRANSISTOR,DTC114YS
	87-026-217-010	TRANSISTOR,DTC124ES
	87-026-293-010	TRANSISTOR,DTC144WS
	87-026-364-010	TRANSISTOR,RN1202
=== DIODE ===		
	87-020-110-010	DIODE,1SS177
	87-020-025-010	DIODE,2B4B41,LC-2
	87-020-123-010	DIODE,DS446
	87-027-365-010	DIODE,S5277B
	87-027-346-010	DIODE,ZENER HZ11A2L
	87-027-364-010	DIODE,ZENER HZ12A3L
	87-027-661-010	DIODE,ZENER HZ30-2L
	87-027-301-010	DIODE,ZENER HZ3A1
	87-027-416-010	DIODE,ZENER HZ3C2
	87-027-702-010	DIODE,ZENER HZ6C2L
	87-027-399-010	DIODE,ZENER HZ7A3L
=== MAIN-1 CIRCUIT BOARD SECTION ===		
PCB-A	*	MAIN-1 CIRCUIT BOARD
C253	★87-010-404-010	CAP,ELECT 4.7-50 SME
C254	★87-010-404-010	CAP,ELECT 4.7-50 SME
C255	★87-010-404-010	CAP,ELECT 4.7-50 SME
C256	★87-010-404-010	CAP,ELECT 4.7-50 SME
C701	★87-010-133-010	CAP,ELECT BP 2.2-50V
C702	★87-010-133-010	CAP,ELECT BP 2.2-50V
C703	★87-010-697-010	CAP,ELECT AWD 220-16
C707	★87-010-402-010	CAP,ELECT 2.2-50 SME
C708	★87-010-402-010	CAP,ELECT 2.2-50 SME
C709	★87-010-379-010	CAP,ELECT 22-16V
C710	★87-010-379-010	CAP,ELECT 22-16V
C713	★87-010-697-010	CAP,ELECT AWD 220-16
C715	★87-018-034-010	CAP,CERA-SOL S 150P
C716	★87-018-034-010	CAP,CERA-SOL S 150P
C717	★87-010-404-010	CAP,ELECT 4.7-50 SME
C719	★87-010-133-010	CAP,ELECT BP 2.2-50V
C720	★87-010-133-010	CAP,ELECT BP 2.2-50V
C721	★87-014-193-010	CAP,PP 0.0022G
C722	★87-014-193-010	CAP,PP 0.0022G
C723	★87-014-193-010	CAP,PP 0.0022G
C724	★87-014-193-010	CAP,PP 0.0022G
C725	★87-014-161-010	CAP,PP 0.0039-100V G
C726	★87-014-161-010	CAP,PP 0.0039-100V G
C733	★87-010-132-010	CAP,ELECT BP 1-50
C734	★87-010-132-010	CAP,ELECT BP 1-50
C741	★87-010-132-010	CAP,ELECT BP 1-50
C742	★87-010-132-010	CAP,ELECT BP 1-50
C743	★87-014-115-010	CAP,PP 0.0056G
C744	★87-014-115-010	CAP,PP 0.0056G
C747	★87-010-404-010	CAP,ELECT 4.7-50 SME
C748	★87-010-404-010	CAP,ELECT 4.7-50 SME
C751	★87-014-079-010	CAP,PP 8200P-100V J
C754	★87-010-138-010	CAP,ELECT BP 22-25
C755	★87-010-132-010	CAP,ELECT BP 1-50
C759	★87-010-378-010	CAP,ELECT 10-16
C760	★87-010-112-010	CAP,ELECT 100-16
C761	★87-010-112-010	CAP,ELECT 100-16
C777	★87-010-402-010	CAP,ELECT 2.2-50 SME
C778	★87-010-402-010	CAP,ELECT 2.2-50 SME
C779	★87-010-112-010	CAP,ELECT 100-16
C781	★87-014-131-010	CAP,PP 0.0018
C782	★87-014-131-010	CAP,PP 0.0018
C783	★87-014-041-010	CAP,PP 220P
C784	★87-014-041-010	CAP,PP 220P
C785	★87-014-049-010	CAP,PP 470P
C786	★87-014-049-010	CAP,PP 470P
C793	★87-010-379-010	CAP,ELECT 22-16V
C794	★87-010-379-010	CAP,ELECT 22-16V
C795	★87-010-374-010	CAP,ELECT 47-10V
C796	★87-010-374-010	CAP,ELECT 47-10V
C797	★87-010-404-010	CAP,ELECT 4.7-50 SME
C798	★87-010-404-010	CAP,ELECT 4.7-50 SME
C813	★87-010-404-010	CAP,ELECT 4.7-50 SME
C814	★87-010-404-010	CAP,ELECT 4.7-50 SME
C815	★87-010-265-010	CAP,ELECT 33-16 SME
C816	★87-010-265-010	CAP,ELECT 33-16 SME
C817	★87-010-697-010	CAP,ELECT AWD 220-16
C909	★87-010-697-010	CAP,ELECT AWD 220-16
C910	★87-010-697-010	CAP,ELECT AWD 220-16
C935	★87-010-404-010	CAP,ELECT 4.7-50 SME
C936	★87-010-404-010	CAP,ELECT 4.7-50 SME
C939	★87-010-404-010	CAP,ELECT 4.7-50 SME
C1002	★87-010-071-010	CAP,ELECT 1-50
C1004	★87-010-071-010	CAP,ELECT 1-50
C1005	★87-010-402-010	CAP,ELECT 2.2-50 SME
C1008	★87-010-071-010	CAP,ELECT 1-50
C1010	★87-010-402-010	CAP,ELECT 2.2-50 SME
J701	87-009-019-010	PIN JACK 2P(REC/LINE IN)
J702	87-009-019-010	PIN JACK 2P(REC/LINE IN)

REF.NO.	PART NO.	DESCRIPTION
J703	87-009-019-010	PIN JACK 2P(CD/DAT DIRECT IN)
J704	87-009-019-010	PIN JACK 2P(CD/DAT DIRECT IN)
J705	87-009-019-010	PIN JACK 2P(PLAY/LINE OUT)
J706	87-009-019-010	PIN JACK 2P(PLAY/LINE OUT)
L701	★82-226-641-010	COIL,BIAS 105K
L702	★87-003-051-010	COIL,CHOKE 470 UH
L703	★82-226-642-010	COIL,OSC 105K-HX
L704	★82-226-642-010	COIL,OSC 105K-HX
L705	★87-003-051-010	COIL,CHOKE 470 UH
L707	★82-226-628-010	COIL,TRAP 105K
L708	★82-226-628-010	COIL,TRAP 105K
L709	★82-132-631-010	COIL,4.7MMH,J
L710	★82-132-631-010	COIL,4.7MMH,J
L711	★82-226-690-010	COIL,2.7 MMH
L712	★82-226-690-010	COIL,2.7 MMH
L713	★82-226-689-010	COIL,2.2 MMH J
L714	★82-226-689-010	COIL,2.2 MMH J
L715	★82-226-623-010	FILTER ,MPX PC-OCC
L716	★82-226-623-010	FILTER ,MPX PC-OCC
⚠ R767	87-029-089-010	RES,FUSIBLE 1/4W-4.7
⚠ R791	87-029-082-010	RES,FUSIBLE 1/4W-100
⚠ R792	87-029-082-010	RES,FUSIBLE 1/4W-100
RY701	87-045-270-010	RELAY G5A-297P
SFR703	★87-021-747-010	SFR 220K
SFR704	★87-021-747-010	SFR 220K
SFR705	★87-021-745-010	SFR 47KB
SFR706	★87-021-745-010	SFR 47KB
SFR1001	★87-021-745-010	SFR 47KB
SFR1002	★87-021-745-010	SFR 47KB
SW702	82-226-625-010	PUSH SW(CD/DAT DIRECT)
SW703	82-226-625-010	PUSH SW(MPX)
SW704	82-226-630-010	PUSH SW(MONITOR)

=== MAIN-2 CIRCUIT BOARD SECTION ===

PCB-B	*	MAIN-2 CIRCUIT BOARD
C101	★87-014-119-010	CAP,PP 0.027G
C102	★87-014-119-010	CAP,PP 0.027G
C103	★82-226-688-010	CAP,FILM GU-1-100V
C104	★82-226-688-010	CAP,FILM GU-1-100V
C201	★87-018-034-010	CAP,CERA-SOL S 150P
C202	★87-018-034-010	CAP,CERA-SOL S 150P
C203	★87-010-133-010	CAP,ELECT BP 2.2-50V
C204	★87-010-133-010	CAP,ELECT BP 2.2-50V
C205	★87-014-193-010	CAP,PP 0.0022G
C206	★87-014-193-010	CAP,PP 0.0022G
C207	★87-014-193-010	CAP,PP 0.0022G
C208	★87-014-193-010	CAP,PP 0.0022G
C209	★87-014-161-010	CAP,PP 0.0039-100V G
C210	★87-014-161-010	CAP,PP 0.0039-100V G
C221	★87-010-132-010	CAP,ELECT BP 1-50
C222	★87-010-132-010	CAP,ELECT BP 1-50
C223	★87-010-132-010	CAP,ELECT BP 1-50
C224	★87-010-132-010	CAP,ELECT BP 1-50
C225	★87-014-115-010	CAP,PP 0.0056G
C226	★87-014-115-010	CAP,PP 0.0056G
C229	★87-010-404-010	CAP,ELECT 4.7-50 SME
C231	★87-010-404-010	CAP,ELECT 4.7-50 SME
C232	★87-010-404-010	CAP,ELECT 4.7-50 SME
C235	★87-018-115-010	CAP,CERA-SOL SS 47P
C236	★87-018-115-010	CAP,CERA-SOL SS 47P
C241	★87-010-404-010	CAP,ELECT 4.7-50 SME
C242	★87-010-404-010	CAP,ELECT 4.7-50 SME
C243	★87-010-404-010	CAP,ELECT 4.7-50 SME
C244	★87-010-404-010	CAP,ELECT 4.7-50 SME

REF.NO.	PART NO.	DESCRIPTION
C901	★87-010-696-010	CAP,ELECT AWD 470-25
C902	★87-010-696-010	CAP,ELECT AWD 470-25
L101	★82-226-622-010	COIL,TRAP 105K,PC-OCC
L102	★82-226-622-010	COIL,TRAP 105K,PC-OCC
R101	★87-025-429-010	RES,MF 1/6W 47K
R102	★87-025-429-010	RES,MF 1/6W 47K
R105	★87-025-455-010	RES,MF 1/4W 110K
R106	★87-025-455-010	RES,MF 1/4W 110K
R107	★87-025-423-010	RES,MF 1/4W 4.7K
R108	★87-025-423-010	RES,MF 1/4W 4.7K
R109	★87-025-414-010	RES,MF 1/6W 56K
R110	★87-025-414-010	RES,MF 1/6W 56K
RY702	87-045-270-010	RELAY G5A-297P
SFR101	★87-021-745-010	SFR 47KB
SFR102	★87-021-745-010	SFR 47KB

=== CONTROL CIRCUIT BOARD SECTION ===

PCB-C	*	CONTROL CIRCUIT BOARD
C101	★87-010-698-010	CAP,ELECT 4700-25 105°
C102	★87-010-410-010	CAP,ELECT 330-50 VX
C103	★87-010-247-010	CAP,ELECT 100-50 SME
C104	★87-010-394-010	CAP,ELECT 220-35 SME
C105	★87-010-378-010	CAP,ELECT 10-16
C106	★87-010-263-010	CAP,ELECT 100-10V
C107	★87-010-374-010	CAP,ELECT 47-10V
C108	★87-010-237-010	CAP,ELECT 1000-16 SME
C109	★87-010-436-010	CAP,ELECT 1000-35
C111	★87-010-393-010	CAP,ELECT 100-35 SME
C112	★87-010-695-010	CAP,ELECT AWD 2200-25
C113	★87-010-695-010	CAP,ELECT AWD 2200-25
⚠ C116	★87-019-112-010	SPARK KILLER 0.01 E
C117	★87-018-131-010	CAP,CERA-SOL SS 1000P
C118	★87-010-401-010	CAP,ELECT 1-50 SME
C119	★87-010-378-010	CAP,ELECT 10-16
C120	★87-010-378-010	CAP,ELECT 10-16
C121	★87-010-235-010	CAP,ELECT 470-16
C123	★87-010-265-010	CAP,ELECT 33-16
C124	★87-010-401-010	CAP,ELECT 1-50 SME
C126	★87-018-131-010	CAP,CERA-SOL SS 1000P
L101	★82-196-649-010	COIL,OSC LC6502C
SFR101	★87-021-737-010	SFR 470
⚠ SW108	87-036-015-010	SLIDE SW(POWER)

=== DISPLAY CIRCUIT BOARD SECTION ===

PCB-D	*	DISPLAY CIRCUIT BOARD
C201	★87-018-112-010	CAP,CERA-SOL SS 30P
C202	★87-018-112-010	CAP,CERA-SOL SS 30P
C203	★87-010-079-010	CAP,ELECT 100-6.3
C204	★87-010-075-010	CAP,ELECT H5 10-16
FL201	82-226-621-010	FL,CP5345AGR(PEAK/CAL-LEVEL METER)
SW202	87-031-771-010	TACT SW(PEAK HOLD RESET,AUTO)
SW203	87-031-771-010	TACT SW(PEAK HOLD RESET,MANUAL)
SW204	87-031-771-010	TACT SW(LINEAR COUNTER RESET)
SW205	87-031-771-010	TACT SW(MEMORY ON/OFF)
SW206	82-226-626-010	PUSH SW(DOLBY-NR B)
SW207	82-226-626-010	PUSH SW(DOLBY-NR C)
SW208	82-226-626-010	PUSH SW(DBX)
X201	★87-030-096-010	FILTER,CERAMIC 4MHZ

=== KEY SWITCH CIRCUIT BOARD SECTION ===

PCB-E	*	KEY SWITCH CIRCUIT BOARD
D201	87-001-137-010	LED,SLP981C50(RECORD)
D202	87-001-137-010	LED,SLP981C50(REC MUTE)
D203	87-001-138-010	LED,SLP481C50(PAUSE)

REF.NO.	PART NO.	DESCRIPTION
D204	87-001-122-010	LED,SLP381C50(PLAY)
D205	87-001-137-010	LED,SLP981C50(OPERATION STANDBY)
SW201	87-031-771-010	TACT SW(REWIND/REVIEW)
SW202	87-031-771-010	TACT SW(PLAY)
SW203	87-031-771-010	TACT SW(STOP)
SW204	87-031-771-010	TACT SW(F.FWD/CUE)
SW205	87-031-771-010	TACT SW(PAUSE)
SW206	87-031-771-010	TACT SW(RECORD)
SW207	87-031-771-010	TACT SW(REC MUTE)
SW208	82-226-648-010	SLIDE SW(TIMER)
SW209	82-226-647-010	PUSH SW(MEMORY,STOP/REPLAY)

=== JACK CIRCUIT BOARD SECTION ===

PCB-F	*	JACK CIRCUIT BOARD
C801	★87-010-071-010	CAP,ELECT 1-50
C802	★87-010-071-010	CAP,ELECT 1-50
C805	★87-010-112-010	CAP,ELECT 100-16
C807	★87-010-112-010	CAP,ELECT 100-16
J801	87-009-018-010	JACK 6.3,HP-AU(PHONES)
VR703	82-226-627-010	VOLUME,10KA(PHONE LEVEL)

=== REC VR CIRCUIT BOARD SECTION ===

PCB-G	*	REC VR CIRCUIT BOARD
VR701	82-226-624-010	VOLUME,20KA(RECORD LEVEL)

=== CAL. VR CIRCUIT BOARD SECTION ===

PCB-H	*	CAL VR CIRCUIT BOARD
VR705	82-226-644-010	VOLUME,50KB (CAL.-REC LEVEL)
VR707	82-226-643-010	VOLUME,5KB(CAL.-BIAS)

=== SWITCH CIRCUIT BOARD SECTION ===

PCB-I	*	SWITCH CIRCUIT BOARD
SW701	82-226-629-010	ROTARY SW(REC EQ)
SW801	82-226-646-010	ROTARY SW(CALIBRATION)

=== DBX-1 CIRCUIT BOARD SECTION ===

PCB-J	*	DBX-1 CIRCUIT BOARD
C306	★87-014-040-010	CAP,PP 200P
C308	★87-014-033-010	CAP,PP 100P
C312	★87-014-045-010	CAP,PP 330P
C319	★87-015-425-010	CAP,AL 1-25
C320	★87-010-378-010	CAP,ELECT 10-16
C321	★87-015-215-010	CAP,TANTALUM 10-25V
C406	★87-014-040-010	CAP,PP 200P
C408	★87-014-033-010	CAP,PP 100P
C412	★87-014-045-010	CAP,PP 330P
C419	★87-015-425-010	CAP,AL 1-25
C420	★87-010-378-010	CAP,ELECT 10-16
C421	★87-015-215-010	CAP,TANTALUM 10-25V
SFR319	★87-021-867-010	SFR 47K
SFR419	★87-021-867-010	SFR 47K

=== DBX-2 CIRCUIT BOARD SECTION ===

PCB-K	*	DBX-2 CIRCUIT BOARD
C508	★87-014-033-010	CAP,PP 100P
C509	★87-014-033-010	CAP,PP 100P
C512	★87-014-045-010	CAP,PP 330P
C520	★87-010-378-010	CAP,ELECT 10-16
C521	★87-015-215-010	CAP,TANTALUM 10-25V
C608	★87-014-033-010	CAP,PP 100P
C609	★87-014-033-010	CAP,PP 100P
C612	★87-014-045-010	CAP,PP 330P
C620	★87-010-378-010	CAP,ELECT 10-16
C621	★87-015-215-010	CAP,TANTALUM 10-25V
SFR519	★87-021-867-010	SFR 47K

REF.NO.	PART NO.	DESCRIPTION
SFR619	★87-021-867-010	SFR 47K

=== REMOTE CIRCUIT BOARD SECTION ===
(K1 MODEL ONLY)

PCB-L	*	REMOTE CIRCUIT BOARD
J1	87-032-985-010	SOCKET,DIN 8P(REMOTE)

=== MECHANISM-1 CIRCUIT BOARD SECTION ==

PCB-M	*	MECHANISM-1 CIRCUIT BOARD
SW104	81-505-607-010	LEAF SW(MT DET.)
SW105	81-505-607-010	LEAF SW(CRO2 DET.)
SW106	81-505-607-010	LEAF SW(REC ENA.)

=== MECHANISM-2 CIRCUIT BOARD SECTION ==

PCB-N	*	MECHANISM-2 CIRCUIT BOARD
SOL101	81-507-237-010	SOLENOID 9ME-C
SOL102	81-507-237-010	SOLENOID 9ME-C
SW103	81-505-607-010	LEAF SW(CASSETTE DET.)
SW107	81-505-607-010	LEAF SW(CASSETTE DET.)

=== AUTO STOP CIRCUIT BOARD SECTION ===

PCB-O	81-505-605-010	AUTO STOP CIRCUIT BOARD
PD1	87-027-644-010	PHOTO SENSOR NJL-5141EA
PD2	87-027-644-010	PHOTO SENSOR NJL-5141EA

=== MISCELLANEOUS ===

⚠	87-085-207-010	CORD BUSHING
⚠	87-034-761-010	AC CORD H(H)
⚠	87-034-759-010	AC CORD E(E,Z)
⚠	87-034-760-010	AC CORD K(K,K1)
⚠	87-034-762-010	AC CORD(C)
D123	87-020-109-010	LED SLF-201C(LIGHT)
EH	87-046-288-010	HEAD,EH
M101	87-045-210-010	REEL MOTOR(REEL)
M102	87-045-175-010	MOTOR DC,SYSTEM SERVO(CAPST)
M103	87-045-210-010	REEL MOTOR(PLAY)
⚠ PT1	82-226-633-010	POWER TRANSFORMER AUDIO(H)
⚠ PT1	82-226-637-010	POWER TRANSFORMER AUDIO(E,Z)
⚠ PT1	82-226-639-010	POWER TRANSFORMER AUDIO(K,K1)
⚠ PT1	82-226-635-010	POWER TRANSFORMER AUDIO(C)
⚠ PT2	82-226-634-010	POWER TRANSFORMER MECHA(H)
⚠ PT2	82-226-638-010	POWER TRANSFORMER MECHA(E,Z)
⚠ PT2	82-226-640-010	POWER TRANSFORMER MECHA(K,K1)
⚠ PT2	82-226-636-010	POWER TRANSFORMER MECHA(C)
RPH	87-046-308-010	HEAD,COMBINATION-AMO PC-OCC
SOL103	82-226-680-010	SOLENOID,SDC-1031
SW101	81-505-601-010	LEAF SW(PLAY)
SW102	81-505-601-010	LEAF SW(PAUSE)
⚠ SW108	87-031-586-010	ROTARY SW(AC VOLTAGE)(H)

Combination Circuit Board A 82-226-601-210

PCB-A 82-226-603-210

PCB-B 82-226-602-210

PCB-F 82-226-604-210

PCB-G 82-226-605-210

PCB-H 82-226-607-210

PCB-I 82-226-606-210

PCB-L 82-226-608-210 (K1 MODEL ONLY)

Combination Circuit Board B 82-226-611-210

PCB-C 82-226-612-210

PCB-D 82-226-614-210

PCB-E 82-226-613-210

Combination Circuit Board C 82-226-617-110

PCB-J 82-226-618-110

PCB-K 82-226-619-110

Combination Circuit Board D 86-543-611-010

PCB-M 86-543-612-010

PCB-N 86-543-613-010

IC DESCRIPTION

1. IC, LC6502B-724

Pin No.	Symbol	I/O	Description	
			When K-SIFT is set to "H"	When K-SIFT is set to "L"
42	K-REW/ K-REC EN.	I	REW key input(Active Low)	REC EN key input(Active High) [REC enabled at "H"]
1	K-PLAY/ K-TIM·REC	I	PLAY key input(Active Low)	TIMER REC input(Active High)
2	K-STOP/ K-CNT·RES	I	STOP key input(Active Low)	Counter Reset input(Active High)
3	K-FF/ K-TIM·PLY	I	FF key input(Active Low)	TIMER PLAY/Repeat input (Active High)
4	K-PAUSE/ K-CZ·PLY	I	PAUSE key input(Active Low)	Counter "0000" replay input (Active High)
5	K-REC/K·CST	I	REC key input(Active Low)	Cassette switch input(Active High) [Set to "H" level with cassette]
6	K-RMT/ K-CZ·STP	I	REC MUTE key input(Active Low)	Counter "0000" stop input (Active High)
7	M-CAPST	O	Capstan motor control input. Motor tunrs at "H" level.	
8	M-FWD	O	Sub-motor forward rotation output. Set to "H" in PLAY/REC, FF and CUE modes.	
9	M-RVS	O	Sub-motor reverse rotation output. Set to "H" in REW/REV modes.	
10	O-ADMS	–	Not used.	
11	S-PAUSE	O	Pause plunger output. Set to "H" PAUSE, PLAY PAUSE, R/P PAUSE, FF, REW, CUE and REV modes.	
12	S-PLAY	O	Play plunger output. Set to "H" in PLAY, PLAY PAUSE, R/P PAUSE, CUE and REV modes.	
13	$\overline{\text{O-RMT}}$	O	REC MUTE output. Set to "H" when the mechanism is stabilized in the REC/PLAY modes.	
14	$\overline{\text{O-LMT}}$	O	PLAY MUTE output. Set to "H" when the mechanism is stabilized in PLAY, REC/PLAY, CUE and REV modes.	
15	D-REC	O	REC LED output. Used in O-REC also. Set to "H" in REC, REC/PLAY, REC/PLAY-PAUSE, REC/PAUSE, REC/PLAY/REC MUTE modes.	
16	D-RMT	O	REC MUTE LED output. Set to "H" in REC/PLAY/RMT modes. Set to "H" every 1 sec when the RMT key is pressed continuously for 4 sec or more.	
17	D-PAUSE	O	Pause LED output. Set to "H" in PAUSE, R/P PAUSE, PLAY/PAUSE modes.	
18	D-PLAY	O	Play LED output. Set to "H" in PLAY, REC/PLAY, PLAY/PAUSE, R/P PAUSE modes.	
19	$\overline{\text{RESET}}$	–	Microprocessor reset input. Gradually changes to +5V from 0V within 3 sec after power is turned on.	
20	TEST	–	Connected to GND.	
21	Vss	–		
22	OSC 1	I	Microprocessor clock input(400kHz)	
23	OSC 2	I		
24 ∫ 27	G_0 ∫ G_3	O ∫ O	FL counter grid 0, Digit scan output, 1 place digit. ∫ FL counter grid 3, Digit scan output, 1000 place digit.	
28 ∫ 34	SEG g ∫ SEG a	O ∫ O	FL segment output g. ∫ FL segment output a.	

Pin No.	Symbol	I/O	Description
35	D-ADMS	O	ADMS LED output. Set to "H" during slack tape removal and ADMS mode after power is turned on.
36	M-SLOW	O	Reel motor voltage control output. Set to "H" in PLAY and REC/PB modes.
37	K-SIFT	O	Select key input according to the "H" or "L" state.
38	$\overline{HOLD}$	—	Connected to +5V.
39	$\overline{INT}$	—	
40	V_{DD}	—	
41	I-REEL	I	Take-up reel rotation pulse input. Auto stop, FL counter and slack tape removal control.

2. IC, HD614042S-A87

Pin No.	Symbol	I/O	Description	Type of Port
1 ⌇ 9	SEG 16 ⌇ SEG 8	O ⌇ O	FL meter section SEG 16 output. ⌇ FL meter section SEG 8 output.	High dielectric strength PULL DOWN ⌇ High dielectric strength PULL DOWN
10	SEG 7	O	FL meter section SEG 7 output and SEG DP output.	High dielectric strength PULL DOWN
11	SEG 6	O	FL meter section SEG 6 output and SEG g output.	High dielectric strength PULL DOWN
12	SEG 5	O	FL meter section SEG 5 output and SEG f output.	High dielectric strength PULL DOWN
13	SEG 4	O	FL meter section SEG 4 output and SEG e output.	High dielectric strength PULL DOWN
14	SEG 3	O	FL meter section SEG 3 output and SEG d output.	High dielectric strength PULL DOWN
15	SEG 2	O	FL meter section SEG 2 output and SEG c output.	High dielectric strength PULL DOWN
16	SEG 1	O	FL meter section SEG 1 output and SEG b output.	High dielectric strength PULL DOWN
17	SEG 0	O	FL meter section SEG 0 output and SEG a output.	High dielectric strength PULL DOWN
			[The segments light when pins 1-17 are "H" and go off when they are "L".]	——
18	4/5	I	4 or 5-wave switching input (number of waves generated by the rotation of reel disk). "L" input causes 5 waves.	High dielectric strength PULL DOWN
19	V_{DISP}	I	PULL DOWN power (-VDD) for the FL driver.	V_{DISP}
20	$\overline{MF}$	I	Motor forward input. "L" input causes forward rotation.	PULL UP
21	$\overline{MR}$	I	Motor reverse input. "L" input causes reverse rotation.	PULL UP
22	FAIR	I	Rotation signal input from mechanism right reel disk (ϕR)	PULL UP
23	FAIL	I	Rotation signal input from mechanism left reel disk (ϕL)	PULL UP
24	$\overline{REC}$	I	Recording state input. "L" input causes REC ON.	PULL UP
25	$\overline{CAL}$	I	Calibration state input. "L" input causes CAL ON.	PULL UP
26	$\overline{GL}$	O	FL meter section GRID L output ("L" causes on and "H" causes off).	PULL UP
27	$\overline{GR}$	O	FL meter section GRID R output ("L" causes on and "H" causes off).	PULL UP

Pin No.	Symbol	I/O	Description	Type of Port
28 ∫ 31	$\overline{G_0}$ ∫ $\overline{G_3}$	O ∫ O	FL counter section GRID 0 output ("L" causes on and "H" causes off). ∫ FL counter section GRID 3 output ("L" causes on and "H" causes off).	PULL UP ∫ PULL UP
32	Vcc	–	+5V power supply.	———
33	MODE	I	Calibration mode switching input ("L" causes Mode A).	PULL UP
34	$\overline{\text{MUTE}}$	I	Meter muting input ("L" causes muting and "H" releases muting.)	PULL UP
35	L IN	I	Comparator Lch input.	PULL UP
36	R IN	I	Comparator Rch input.	PULL UP
37 ∫ 42	$\overline{\text{DA 0}}$ ∫ $\overline{\text{DA 5}}$	O ∫ O	D/A conversion 0th bit (LSB) output ("L" for on and a potential to be applied). ∫ D/A conversion 5th bit (LSB) output ("L" for on and a potential to be applied).	C-MOS output ∫ C-MOS output
43	GAIN	O	D/A conversion gain switching output ("H" causes 20dB attenuation).	C-MOS output
44	–	–	Not used.	
45	$\overline{\text{CRES}}$	I	Counter reset key input ("L" causes KEY ON).	PULL UP
46	$\overline{\text{C MEM}}$	I	Counter memory key input ("L" causes KEY ON).	PULL UP
47	$\overline{\text{AUTO}}$	I	Peak hold reset auto key input ("L" causes KEY ON).	PULL UP
48	$\overline{\text{MANU}}$	I	Peak hold reset manual key input ("L" causes KEY ON).	PULL UP
49	RESET	I	Reset signal input ("L" releases reset).	
50	TEST	I	$+V_{DD}$(5V)	
51	OSC 1	I	External clock inputs (f = 4.19 MHz).	
52	OSC 2	I		
53	GND	I	Ground (0V).	
54	CCLK	O	Counter clock output.	PULL UP
55	C00	O	Counter 0.00 output.	PULL UP
56	$\overline{\text{CHECK}}$	I	FL output check input ("L" causes check state)	PULL UP
57	SYNC	–	Not used.	
58 ∫ 64	SEG 17 ∫ SEG 23	O ∫ O	FL meter section SEG 17 output ("H" causes on and "L" causes off) ∫ FL meter section SEG 23 output ("H" causes on and "L" causes off)	High dielectric strength PULL DOWN ∫ High dielectric strength PULL DOWN

3. IC, CX20188

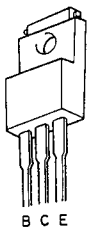
Pin No.	Symbol	I/O	Description
1	Vcc	–	Positive power terminal.
2,41	REC IN	I	Recording inputs.
3	I REF	I	Reference current input.
4,39	PB IN	I	Playback inputs.
5	CAL/REC/PB	I	Calibration/recording/playback switching input.
6,37	PB FB	–	Playback feedback terminals.
7,36	REC FB	–	Recording feedback terminals.
8,35	GND	–	When two power supplies are operating: Ground pins, When one power supply is operating: Vcc/2 pins.
9,34	LINE OUT	O	Line outputs (decoding outputs).
10,33	SSK	–	Spectral skewing switching terminals.
11,32	VF IN	I	Encoding circuit inputs.
12,31	HPF H	O	HLS highpass filter terminals.
13,30	TCH 2	O	HLS detector time constant terminals 2.
14,29	TCH 1	O	HLS detector time constant terminals 1.

Pin No.	Symbol	I/O	Description
15,28	WT H	O	HLS weighting terminals.
16,27	TCL 2	O	LLS detector time constant terminals 2.
17,26	TCL 1	O	LLS detector time constant terminals 1.
18,25	WT L	O	LLS weighting terminals.
19,24	HPF L	O	LLS highpass filter terminals.
20,23	ANT S	O	Anti-saturation terminals.
21,22	REC OUT	O	Recording outputs (encoding outputs).
38	OFF/B/C	O	Dolby NR off/type B/type A switching input.
40	CAL IN	O	Calibration input.
42	VEE	O	When two power supplies are operating: Negative power supply pin, when one power supply is operating: Ground pin.

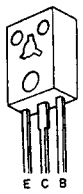
PRACTICAL SERVICE FIGURE

PB output level :	700±50mV
(TTS-200)(TTA-161,TCC-130)	(LINE OUT)
REC/PB output :	0VU±2dB
(TTA-600)	(LINE OUT)
REC/PB distortion :	Less than 1.5%
	(NORM., CrO_2, MT tapes)
Playback noise :	Less than 4.0/3.5mV
	(120μs/70μs, DOLBY NR OFF)
	Less than 1.8/1.5mV
	(120μs/70μs, DOLBY NR B)
	Less than 1.5/1.3mV
	(120μs/70μs, DOLBY NR C)
	Less than 0.18/0.18mV
	(120μs/70μs, DBX, DIN AUDIO)
• Erase ratio (125Hz) :	More than 60dB
Crosstalk :	More than 45dB
Channel separation :	More than 30dB
Level drift :	Within 1dB
(10kHz,TTS-210)	
REC/PB S/N ratio :	More than 45/50dB
(WTD-A)	(DOLBY C NR OFF/ON with MT, CrO_2 tapes)
	More than 40/48dB
	(DOLBY C OFF/ON with NORM. tape)
(DIN AUDIO)	More than 69dB
	(DBX ON with MT, CrO_2 and NORM. tape)
DBX ON MRL (Dist. 3%)	
Level :	±21VU
	(MT, CrO_2 and NORM. tapes)
Recording bias frequency :	105kHz
Tape speed :	3kHz±1.5%
TTA-100(TTA-111S)	
Wow & flutter :	Less than 0.023%
(W.R.M.S)	(FWD)
Take-up torque :	38±10g-cm
	[0.38±0.1mN·m]
Fast forward torque :	120 $^{+70}_{-30}$ g-cm
	[1.18 $^{+0.69}_{-0.29}$ mN·m]
Rewind torque :	120 $^{+30}_{-30}$ g-cm
	[1.18 $^{+0.29}_{-0.29}$ mN·m]
Back-tension :	7.5±2.5g-cm
	[0.07±0.025mN·m]
Pinch roller pressure :	350g (F side)
	[3.4mN·m]
	140g (S side)
	[1.4mN·m]
Test tape :	METAL TTA-620(TTA-119MP)
	CrO_2 TTA-610(TTA-119H)
	NORMAL TTA-600(TTA-119K)

2SA952
2SA1015
2SC945
2SC1815
2SC2001
2SC2120



2SB1015
2SD1275

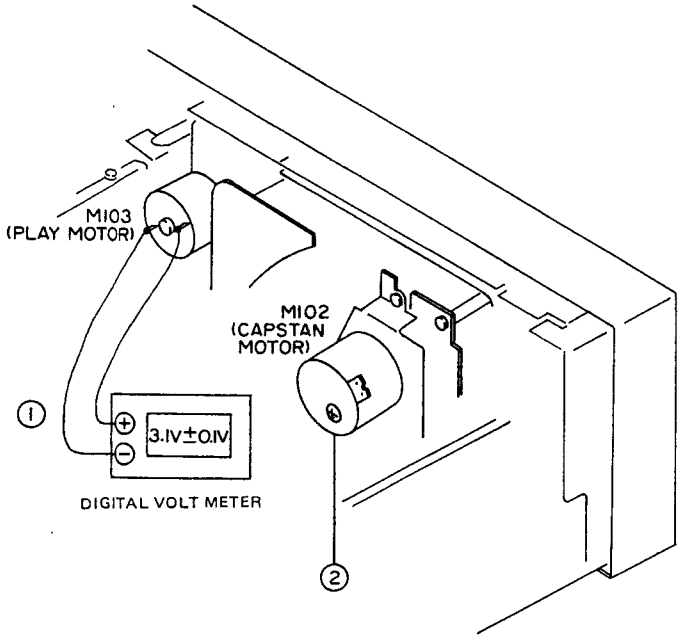


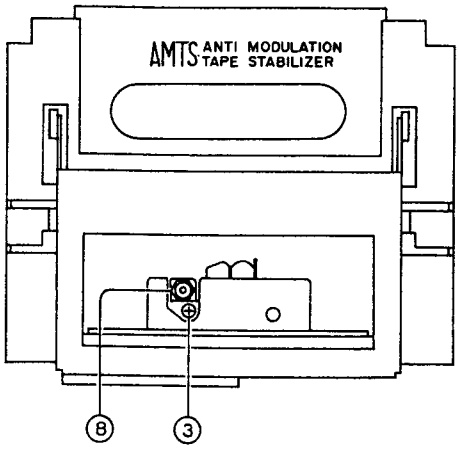
2SC1846

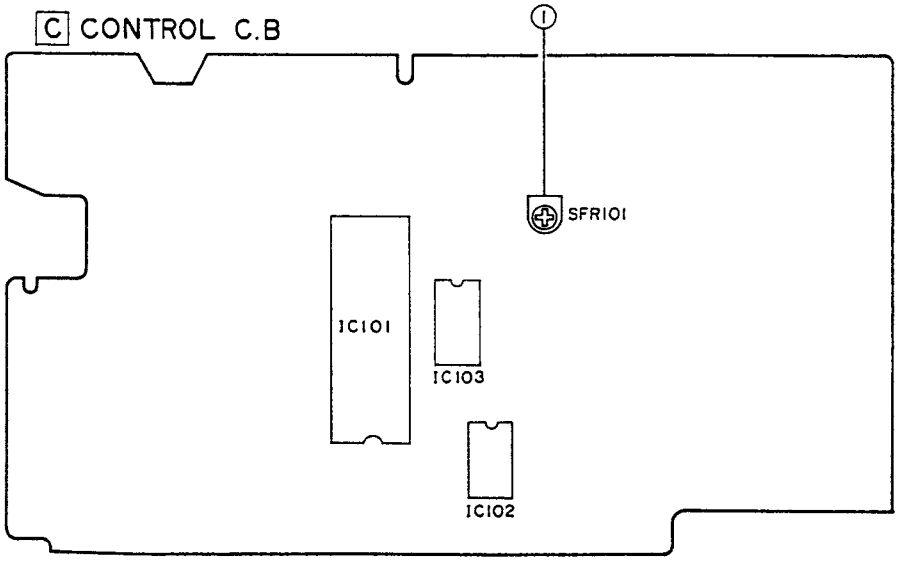
2SC3113
DTA124
DTC114
DTC124
DTC144
RN1202

2SK30

ADJUSTMENT





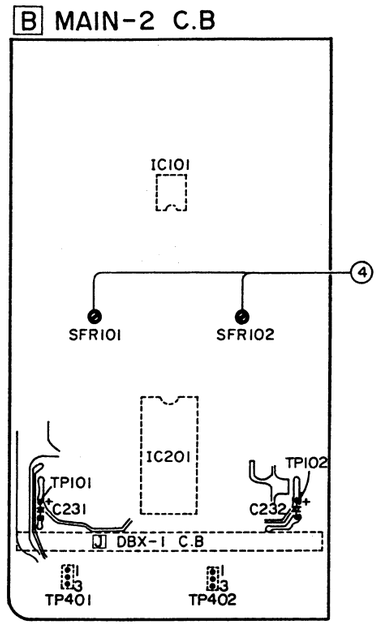


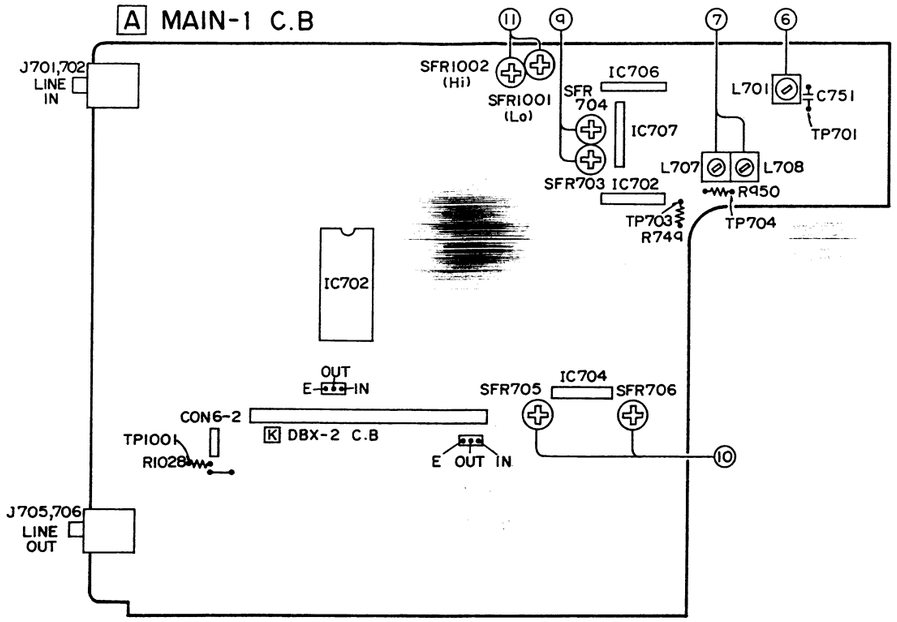
Initial Settings
- REC VOL : Center
- CAL SW : OFF
- REC EQ : NORM
- BIAS VOL : Center click position
- REC LEVEL VOL : Center click position
- INPUT SELECTOR SW : LINE
- MPX SELECTOR SW : THRU
- MONITOR SW : TAPE
- NOISE REDUCTION SW : THRU

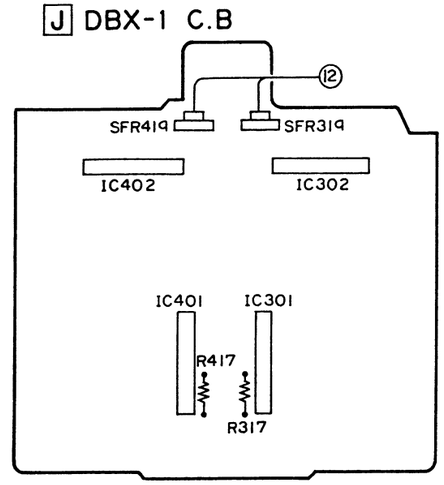
1. Play Motor Adjustment (M103)(CONTROL C.B)
   Settings : · Test tape : TTA-100(TTA-111S)
   · Test point : Both terminals of PLAY motor (M103)
   · Adjustment location : SFR101(PCB-C)
   Method : Play the approximately middle section of the test tape and adjust SFR101 so the voltage at the test point is 3.0±0.1V.

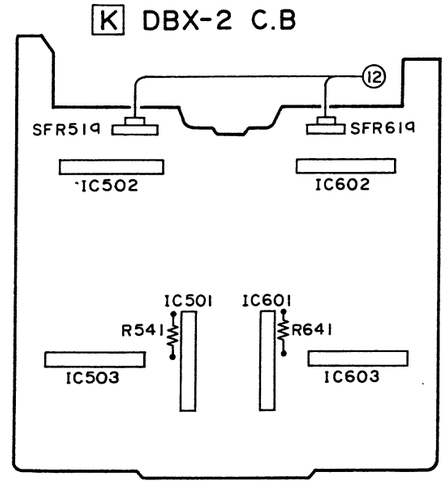
2. Tape Speed Adjustment
   Settings : · Test tape : TTA-100(TTA-111S)
   · Test point : LINE OUT jack
   · Adjustment location : SFR in capstan motor (M102)
   Method : Play the test tape and adjust so the frequency counter reads 3000Hz.

3. Azimuth Adjustment
   Settings : · Test tape : TTS-310(TTA-317E)
   · Test point : LINE OUT jack
   · Adjustment location : Azimuth adjustment screw
   Method : Play the 10kHz signal of the test tape and adjust so the output is maximum and the waveforms in the Lissajours figure are in phase.









4. Dolby NR Level Adjustment (MAIN-2 C.B)

Settings : · Test tape : TTS-200(TTA-161)
· Test point : LINE OUT jack
· FL meter : Dolby NR mark
· Adjustment locations : SFR101(Lch)
SFR102(Rch)

Method : Play the test tape and adjust so the output level is 710mV.

5. Playback Frequency Response Adjustment

Settings : · Test tape : TTS-310(TTA-317E)
· Test point : LINE OUT jack

Method : Play the 315Hz and 10kHz signals of the test tape and adjust so the output of the 10kHz signal is +1dB$\pm\frac{2}{1}$dB with respect to that of the 315Hz signal.

6. Bias Frequency Adjsutment (MAIN-1 C.B)

Settings : · Test tape : TTA-620(TTA-119MP)
· Test point : TP701
· Adjustment location : L701

Method : Set to the record mode and adjust so the frequency counter reads 105kHz±300Hz.

7. Bias Trap Adjustment

Settings : · Test tape : TTA-620 (TTA-119MP)
· Test points : TP703(Lch)
TP704(Lch)
· Adjustment locations : L707(Lch)
L708(Rch)

Method : Set to the record mode and adjust so the bias voltage leaking to the test point is minimum (less than 3mV).

8. Erase Head Position Adjustment

Settings : · Test tapes : TTA-620(TTA-119MP)
TTA-150(TTA-111H)
(1.5kHz)
· Test point : LINE OUT jack
· Adjustment location : Hexagonal nut of erase head

Method : Record a 125Hz signal of +10VU on test tape TTA-620(TTA-119MP) using this unit. Rewind the recorded section and set to the erase state. Turn the hexagonal nut gradually clockwise and check that 125Hz waveform appears in the Rch playback output. Then turn the hexagonal nut counterclock-wise and stop it where the output is minimum, then turn it by a half turn more counterclockwise.
〔Over-erase check〕
Play test tape TTA-150(TTA-111H) and assume the Rch output as a reference output. Then turn over TTA-150(TTA-111H) and set to the erase state. Turn over the tape again and play the reverse side of the erased section and check that the difference in the Rch output with the reference output is within 1dB.

9. Recording/Playback Frequency Response Adjustment (MAIN-1 C.B)

Settings : · Test tape : TTA-600(TTA-119K)
· Input signal : 1kHz/10kHz(LINE IN)
· Test point : LINE OUT jack
· Adjustment locations : SFR703(Lch)
SFR704(Rch)

Method : Apply a 1kHz signal and adjust the attenuator so the output level at the LINE OUT jack is 50mV. Record and play back the 1kHz and 10kHz signals and adjust so the output difference of both signals is +0.5±0.5dB.

10. Recording/Playback Sensitivity Adjustment (MAIN-1 C.B)

Settings : · Test tape : TTA-600(TTA-119K)
· Input signal : 1kHz(LINE IN)
· Test point : LINE OUT jack
· Adjustment locations : SFR705(Lch)
SFR706(Rch)

Method : Apply a 1kHz signal and adjust the attenuator so the output level at the LINE OUT jack is 0VU(500mV). Record and playback the 1kHz signal and adjust so the output is 0±0.5dB.

11. Calibration Level Adjustment (MAIN-1 C.B)

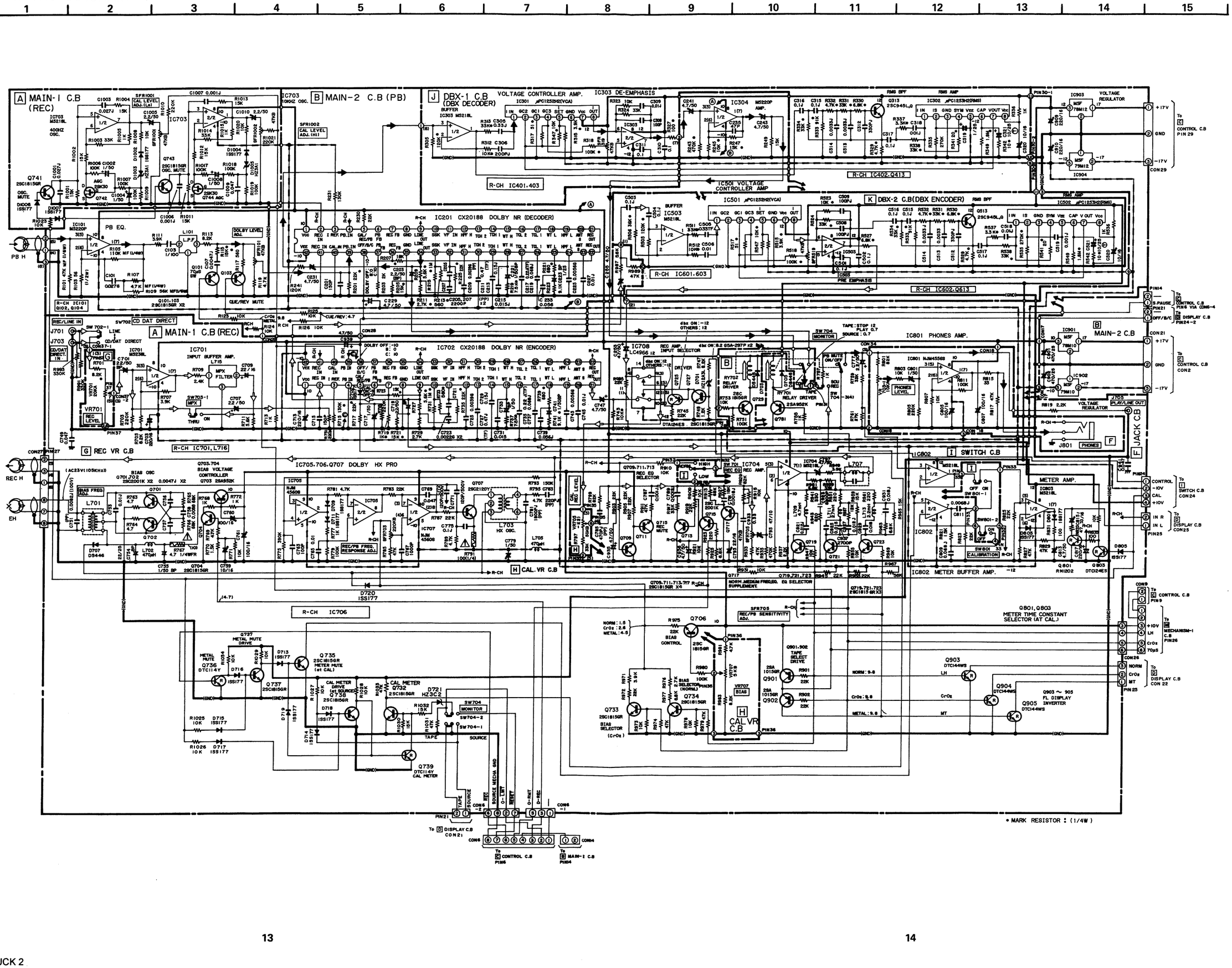
Settings : · Test tape : TTA-600 (TTA-119K)
· CALIBRATION SW : ON
· MONITOR SW : SOURCE
· Test point : Ground TP1001
· Adjustment locations : SFR1001(Lo)
SFR1002(Hi)

Method : Set to the record mode and adjust SFR1001 so the segments up to mark ! of the FL meter light for the LOW FREQ level. Then adjust so the segments up to the third from the mark light for the HIGH FREQ. level.

12. DBX Adjustment

Do not adjust this item.

SCHEMATIC DIAGRAM — 1



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A B C D E F G H I J K

A MAIN-1 C.B (REC)

CON6
To C CONTROL C.B PIN6
<BRN> <WHT> <WHT> <RED> <WHT> <ORG> <WHT> <WHT>

CON14
To B MAIN-2 C.B PIN14
<RED>

CON9
To C CONTROL C.B PIN9
<WHT> <BLU>

CON26
To M MECHANISM -1 C.B PIN26
<BLU> <WHT> <YEL>
4~6 WHT

K DBX-2 C.B

SW702
CD/DAT DIRECT.
LINE ⟷ CD/DAT

SW703
MPX
THRU ⟷ ON

J701,702
REC/LINE IN

J703,704
CD/DAT DIRECT IN

SW704
MONITOR
TAPE ⟷ SOURCE

J705,706
PLAY/LINE OUT

CON2
To C CONTROL C.B PIN2
<RED> <BLK> <WHT>

F JACK C.B

J801
PHONES

VR703
PHONE LEVEL

CON34
To A MAIN-1 C.B PIN34
<WHT> <RED>

CON18
<YEL> <GRY> <YEL>
To B MAIN-2 C.B PIN18

CON32
<RED> <WHT> <BLU>

I SWITCH C.B

SW801
CALIBRATION

SW701
REC EQ
LOW
NORM
HIGH

CON24
To A MAIN-1 C.B PIN24
<RED> <WHT> <YEL> <GRY>

CON33
To A MAIN-1 C.B PIN33
<WHT> <WHT> <ORG> <WHT> <WHT> <BLU>

VR701
RECORD LEVEL

G REC VR C.B

CON37-1
To A MAIN-1 C.B PIN37-1
<WHT> <RED>

CON37-2
To A MAIN-1 C.B PIN37-2
<RED> <WHT>

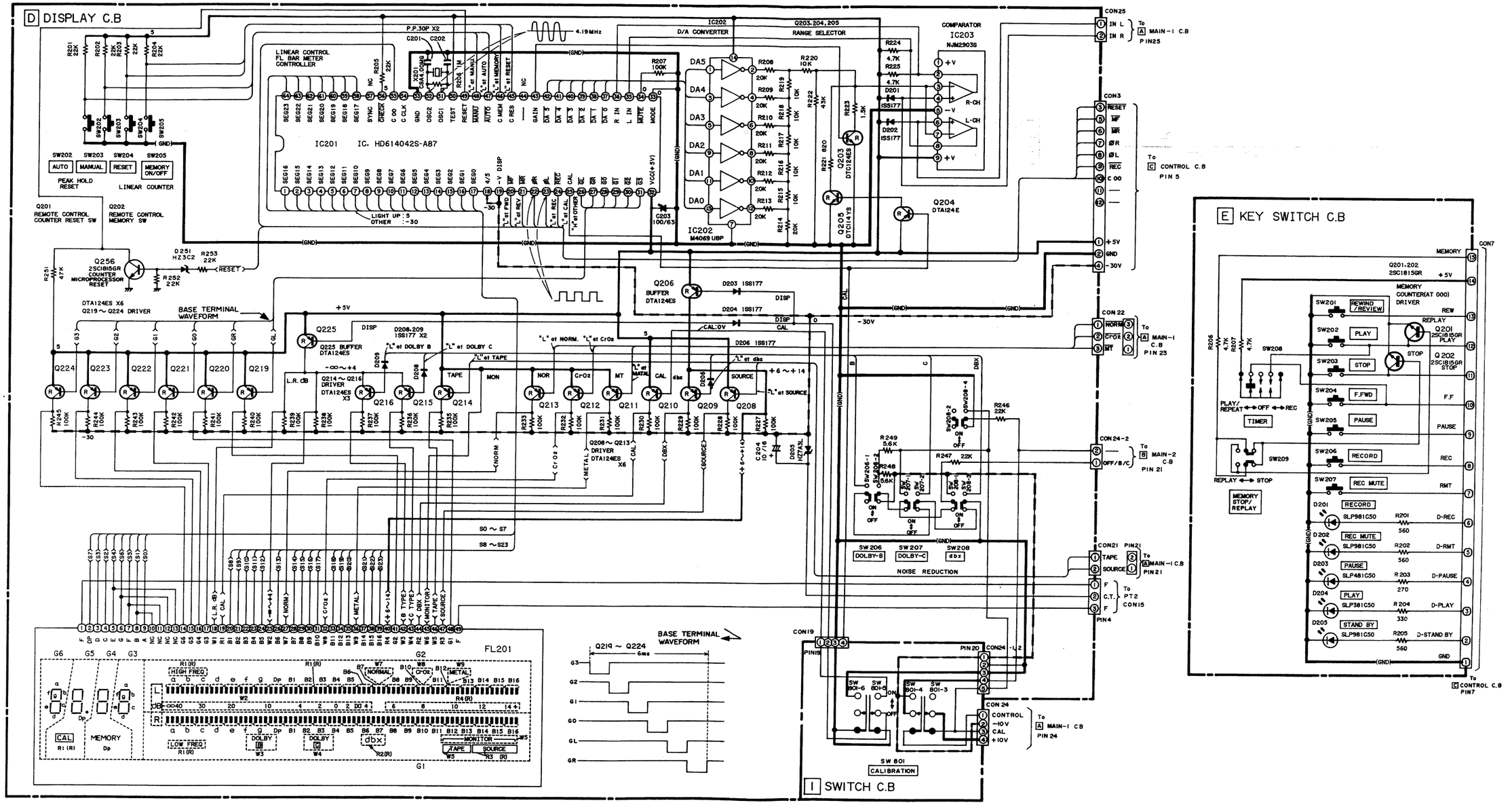
VR705
REC LEVEL
CALIBRATION
BIAS
VR707

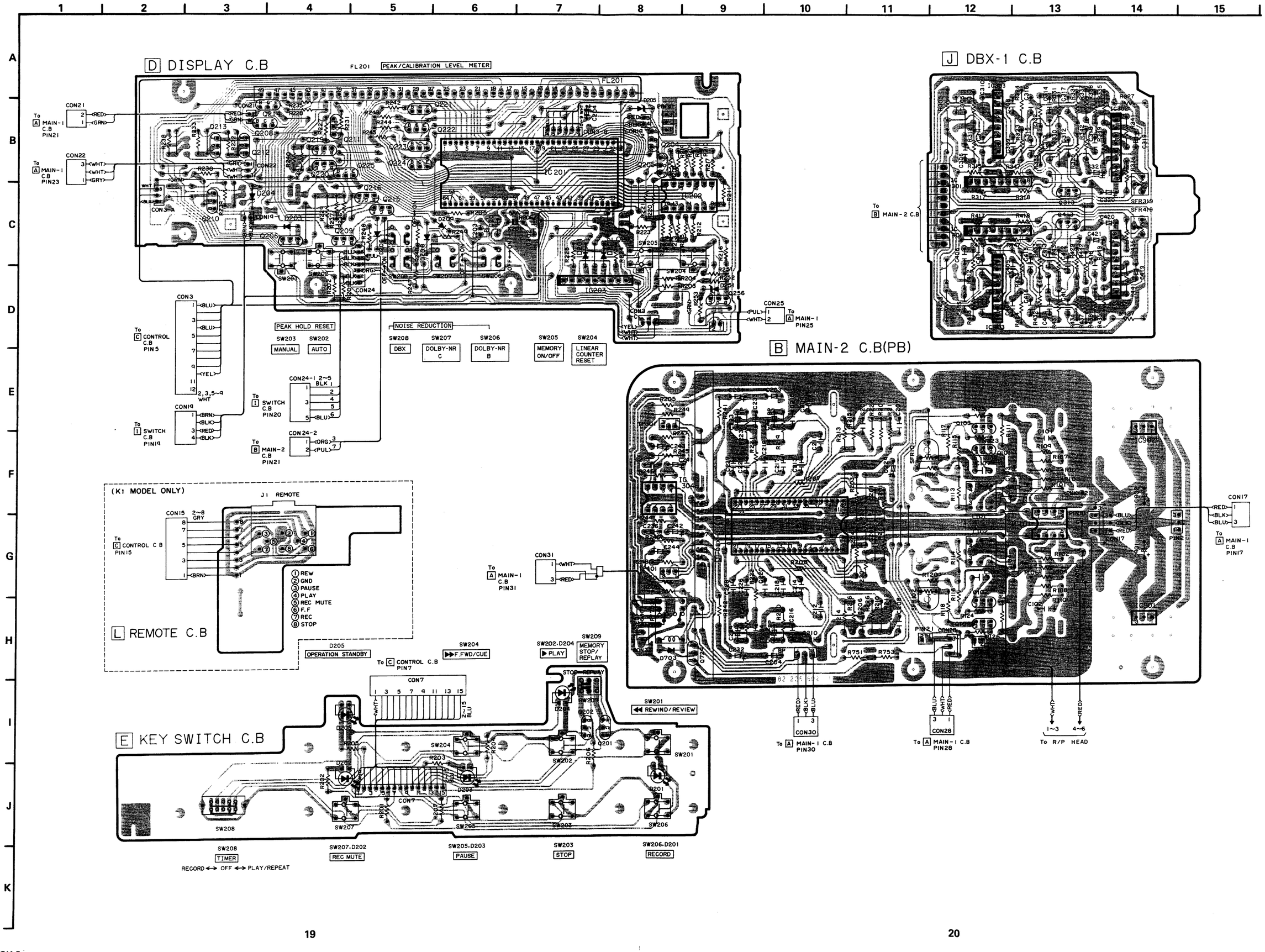
H CAL. VR C.B

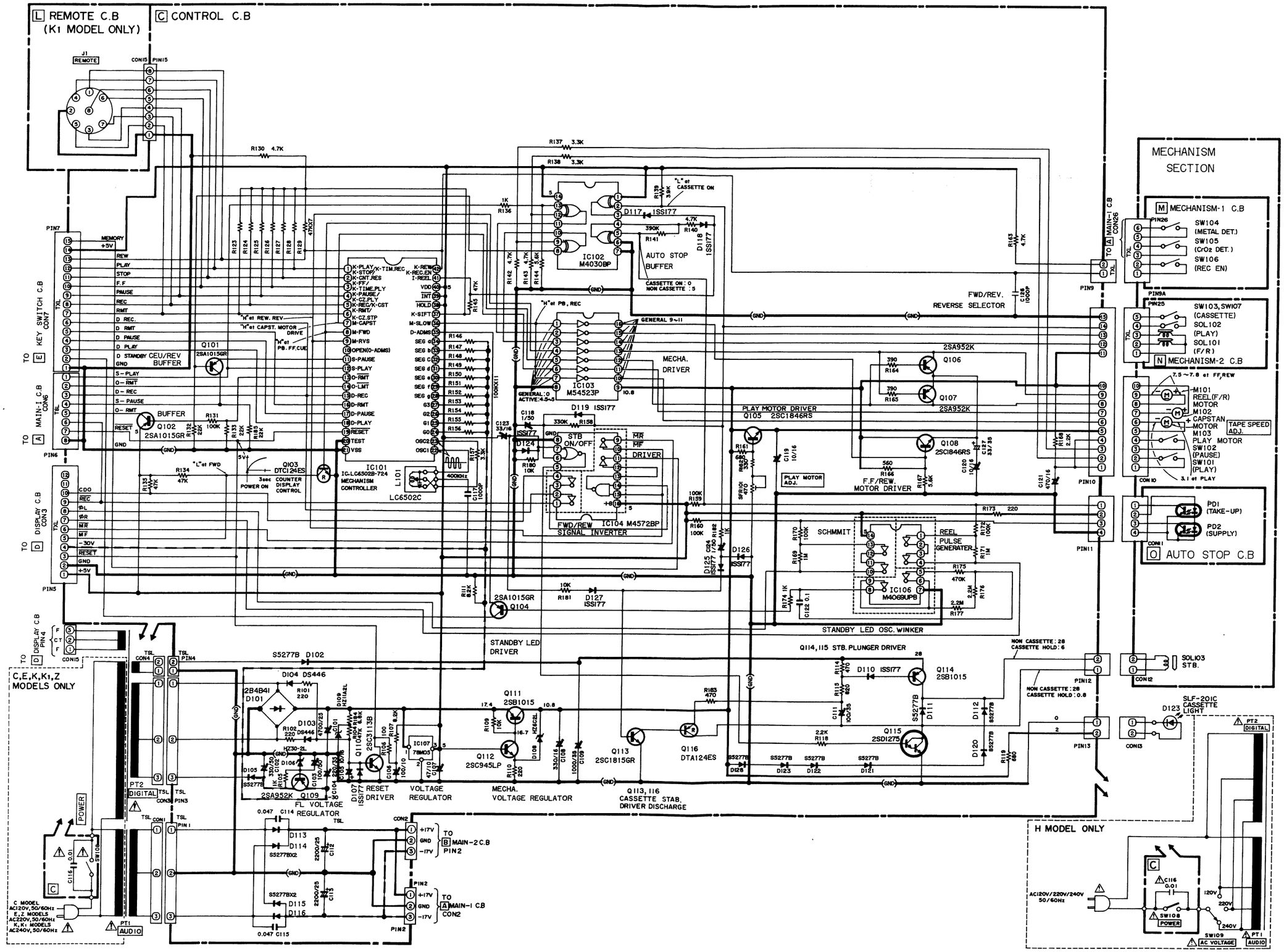
CON35-1
To A MAIN-1 C.B PIN35-1
<WHT> <RED>

CON35-2
To A MAIN-1 C.B PIN35-2
<RED> <WHT>

CON36
To A MAIN-1 C.B PIN36
<WHT> <---> <XXX>


D DISPLAY C.B
IC201 IC. HD614042S-A87
IC202 M4069 UBP
D/A CONVERTER
Q203.204.205 RANGE SELECTOR
COMPARATOR IC203 NJM2903S
LINEAR CONTROL FL BAR METER CONTROLLER
4.19MHz
P.P.30P X2
SW202 AUTO
SW203 MANUAL
SW204 RESET
SW205 MEMORY ON/OFF
PEAK HOLD RESET
LINEAR COUNTER
Q201 REMOTE CONTROL COUNTER RESET SW
Q202 REMOTE CONTROL MEMORY SW
Q256 2SC1815GR COUNTER MICROPROCESSOR RESET
DTA124ES X6 Q219 ~ Q224 DRIVER
BASE TERMINAL WAVEFORM
Q225 BUFFER DTA124ES
Q214 ~ Q216 DRIVER DTA124ES X3
Q206 ~ Q213 DRIVER DTA124ES X6
Q206 BUFFER DTA124ES
Q204 DTA124E
Q205 DTC114YS
Q203 DTC124ES
D203 D204 D206 1SS177
D251 HZ3C2
FL201
CON25 IN L IN R
CON3 RESET MF MR ØR ØL REC C 00 +5V GND -30V
CON 22 NORM CrO2 MT
CON 24-2 OFF/B/C
CON21 TAPE SOURCE
CON 24 CONTROL -10V CAL +10V
CON19
SW 801 CALIBRATION
SW206 DOLBY-B SW207 DOLBY-C SW208 dbx
NOISE REDUCTION
To A MAIN-1 C.B PIN25
To C CONTROL C.B PIN 5
To A MAIN-1 C.B PIN 23
To B MAIN-2 C.B PIN 21
To A MAIN-1 C.B PIN 21
To PT2 CON15
To A MAIN-1 C.B PIN 24
I SWITCH C.B
E KEY SWITCH C.B
CON7
MEMORY COUNTER(AT 000) DRIVER
Q201.202 2SC1815GR
Q201 2SC1815GR PLAY
Q 202 2SC1815GR STOP
SW201 REWIND /REVIEW
SW202 PLAY
SW203 STOP
SW204 F.FWD
SW205 PAUSE
SW206 RECORD
SW207 REC MUTE
SW208
SW209
TIMER
PLAY/REPEAT OFF REC
REPLAY STOP
MEMORY STOP/REPLAY
D201 RECORD SLP981C50 R201 560 D-REC
D202 REC MUTE SLP981C50 R202 560 D-RMT
D203 PAUSE SLP481C50 R203 270 D-PAUSE
D204 PLAY SLP381C50 R204 330 D-PLAY
D205 STAND BY SLP981C50 R205 560 D-STAND BY
GND
To C CONTROL C.B PIN7


D DISPLAY C.B
FL201 PEAK/CALIBRATION LEVEL METER
CON21
To A MAIN-1 C.B PIN21
CON22
To A MAIN-1 C.B PIN23
CON3
To C CONTROL C.B PIN5
CON19
To I SWITCH C.B PIN19
CON24-1 2~5 BLK
To I SWITCH C.B PIN20
CON24-2
To B MAIN-2 C.B PIN21
PEAK HOLD RESET
SW203 MANUAL
SW202 AUTO
NOISE REDUCTION
SW208 DBX
SW207 DOLBY-NR C
SW206 DOLBY-NR B
SW205 MEMORY ON/OFF
SW204 LINEAR COUNTER RESET
CON25
To A MAIN-1 PIN25
J DBX-1 C.B
To B MAIN-2 C.B
B MAIN-2 C.B(PB)
CON31
To A MAIN-1 C.B PIN31
CON17
To A MAIN-1 C.B PIN17
CON30
To A MAIN-1 C.B PIN30
CON28
To A MAIN-1 C.B PIN28
To R/P HEAD
(K1 MODEL ONLY)
J1 REMOTE
CON15 2~8 GRY
To C CONTROL C.B PIN15
1 REW
2 GND
3 PAUSE
4 PLAY
5 REC MUTE
6 F.F
7 REC
8 STOP
L REMOTE C.B
D205 OPERATION STANDBY
To C CONTROL C.B PIN7
SW204 F.FWD/CUE
SW202.D204 PLAY
SW209 MEMORY STOP/REPLAY
SW201 REWIND/REVIEW
CON7
E KEY SWITCH C.B
SW208 TIMER
RECORD ↔ OFF ↔ PLAY/REPEAT
SW207.D202 REC MUTE
SW205.D203 PAUSE
SW203 STOP
SW206.D201 RECORD


L REMOTE C.B
(K1 MODEL ONLY)
C CONTROL C.B
MECHANISM SECTION
M MECHANISM-1 C.B
SW104 (METAL DET.)
SW105 (CrO2 DET.)
SW106 (REC EN)
SW103, SW107 (CASSETTE)
SOL102 (PLAY)
SOL101 (F/R)
N MECHANISM-2 C.B
M101 REEL(F/R) MOTOR
M102 + CAPSTAN MOTOR
M103 PLAY MOTOR
SW102 (PAUSE)
SW101 (PLAY)
TAPE SPEED ADJ.
PD1 (TAKE-UP)
PD2 (SUPPLY)
O AUTO STOP C.B
IC101 IC-LC6502B-724 MECHANISM CONTROLLER
LC6502C
IC102 M4030BP
IC103 M54523P
IC104 M4572BP FWD/REV SIGNAL INVERTER
IC106 M4069UPB
IC107 78M05
AUTO STOP BUFFER
MECHA. DRIVER
PLAY MOTOR DRIVER Q105 2SC1846RS
F.F./REV. MOTOR DRIVER
FWD/REV. REVERSE SELECTOR
REEL PULSE GENERATER
SCHMMIT
STB ON/OFF
DRIVER
STANDBY LED DRIVER
STANDBY LED OSC. WINKER
Q114,115 STB. PLUNGER DRIVER
RESET DRIVER
VOLTAGE REGULATOR
MECHA. VOLTAGE REGULATOR
FL VOLTAGE REGULATOR
Q113,116 CASSETTE STAB. DRIVER DISCHARGE
SLF-201C CASSETTE LIGHT
SOL103 STB.
C,E,K,K1,Z MODELS ONLY
H MODEL ONLY
C MODEL AC120V, 50/60Hz
E,Z MODELS AC220V, 50/60Hz
K,K1 MODELS AC240V, 50/60Hz
AC120V/220V/240V 50/60Hz
POWER
AUDIO
BUFFER
CEU/REV BUFFER
COUNTER DISPLAY CONTROL
3sec POWER ON
"L" at CASSETTE ON
"H" at REW. REV
"H" at CAPST. MOTOR DRIVE
"H" at PB. FF. CUE
"H" at PB, REC
"L" at FWD
7.5~7.8 at FF,REW
3.1 at PLAY
NON CASSETTE : 28
CASSETTE HOLD : 6
NON CASSETTE : 28
CASSETTE HOLD : 0.8
CASSETTE ON : 0
NON CASSETTE : 5
GENERAL 9~11
GENERAL : 0
ACTIVE : 4.5~5
TO E KEY SWITCH C.B CON7
TO A MAIN-1 C.B CON6
TO D DISPLAY C.B CON3
TO D DISPLAY C.B PIN4
TO A MAIN-1 C.B CON26
TO B MAIN-2 C.B PIN2
TO A MAIN-1 C.B CON2
MEMORY +5V
REW
PLAY
STOP
F.F
PAUSE
REC
RMT
D REC.
D RMT
D PAUSE
D PLAY
D STANDBY
GND
S-PLAY
O-RMT
D-REC
S-PAUSE
O-RMT
RESET
TEST
VSS
CDO
REC
RL
RR
MR
MF
-30V
RESET
GND
+5V
F
CT
F
+17V
GND
-17V
PT1
PT2
DIGITAL
TSL
TXL
PIN1
PIN2
PIN3
PIN4
PIN5
PIN6
PIN7
PIN9
PIN9A
PIN10
PIN11
PIN12
PIN13
PIN25
PIN26
CON1
CON2
CON3
CON4
CON5
CON10
CON11
CON12
CON13
SW108
SW109
AC VOLTAGE
2SA1015GR Q101
2SA1015GR Q102
DTC124ES Q103
2SA1015GR Q104
2SA952K Q106
2SA952K Q107
2SC1846RS Q108
2SA952K Q109
2SC945LP Q112
2SC1815GR Q113
DTA124ES Q116
2SB1015 Q111
2SB1015 Q114
2SD1275 Q115
2B4B41 D101
D103 DS446
D104 DS446
D105 S5277B
D106 HZ30-2L
D107 ISS177
D108 HZ6C2L
D109 HZ11A2L
D110 ISS177
D111 S5277B
D112 S5277B
D113 D114 S5277BX2
D115 D116 S5277BX2
D117 ISS177
D118 ISS177
D119 ISS177
D120 S5277B
D121 S5277B
D122 S5277B
D123 S5277B
D124 ISS177
D125 ISS177
D126 ISS177
D127 ISS177
SLF-201C CASSETTE LIGHT
R101 220
R102 220
R103 4700/25
R104 6.8K
R105 100
R106 6.8K
R107 6.8K
R108 100/10
R109 10K
R110 220
R111 82K
R112 100/35
R113 820
R114 470
R115 680
R116 2.2K
R117 680
R118 2.2K
R119 680
R120 680
R121 680
R122 680
R123 4.7K
R124 4.7K
R125 4.7K
R126 4.7K
R127 4.7K
R128 4.7K
R129 47K
R130 4.7K
R131 100K
R132 22K
R133 22K
R134 47K
R135 47K
R136 1K
R137 3.3K
R138 3.3K
R139 39K
R140 4.7K
R141 390K
R142 4.7K
R143 4.7K
R144 5.6K
R145 47K
R146 R147 R148 R149 R150 R151 R152 R153 R154 R155 R156
R157 3.3K
R158 330K
R159 100K
R160 100K
R161 680
R162 1K
R163 4.7K
R164 390
R165 390
R166 560
R167 5.6K
R168 2.2K
R169 1M
R170 100K
R171 10K
R172 10K
R173 220
R174 1K
R175 470K
R176 2.2M
R177 2.2M
R178 100K
R179 10K
R180 10K
R181 10K
R182 1K
R183 470
R184 470
R185 470
C101 HZ11A2L
C102 330/50
C103 100/25
C104 4700/25
C105 100/25
C106 100/10
C107 47/10
C108 330/16
C109 1000/35
C110 0.047K
C111 100/35
C112 2200/25
C113 2200/25
C114 0.047
C115 0.047
C116 0.01
C117 1000P
C118 1/50
C119 10/16
C120 10/16
C121 470/16
C122 0.1
C123 33/16
C124 33/35
C125 0.22
C126 0.22
C127 33/35
C128 1000P
C129 0.01
C130 0.01
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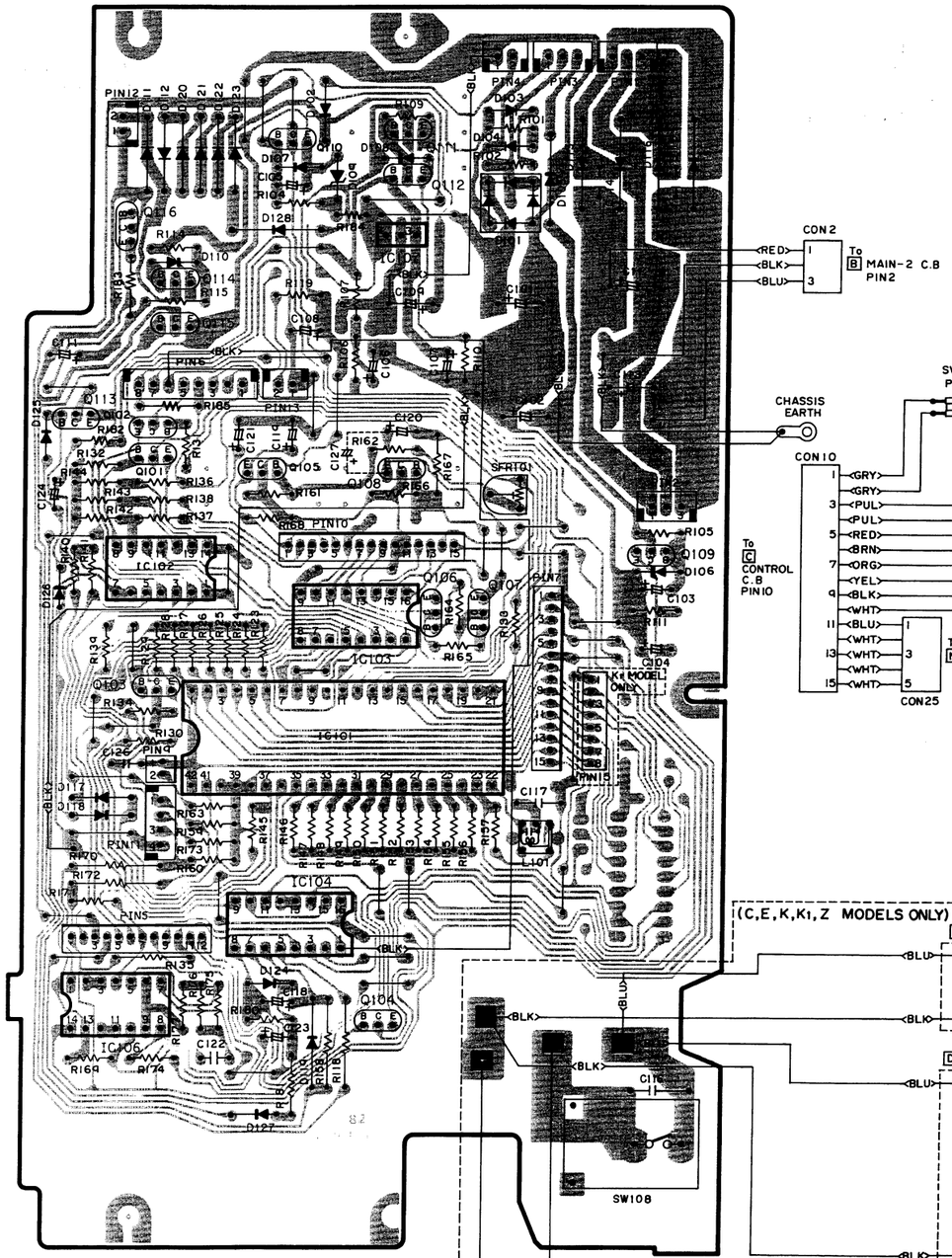
C CONTROL C.B



CON2
<RED> 1 — To B MAIN-2 C.B PIN2
<BLK> 2
<BLU> 3

CHASSIS EARTH

To C CONTROL C.B PIN10

CON10
1 <GRY>
2 <GRY>
3 <PUL>
4 <PUL>
5 <RED>
6 <BRN>
7 <ORG>
8 <YEL>
9 <BLK>
10 <WHT>
11 <BLU>
12 <WHT>
13 <WHT>
14 <WHT>
15 <WHT>

To N MECHANISM-2 C.B PIN25

CON25

SW101 PLAY
SW102 PAUSE

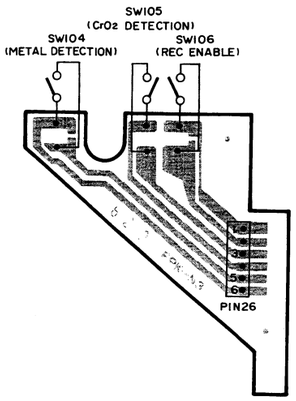
M103 (PLAY MOTOR) — <RED> <BRN>
M102 (CAPSTAN MOTOR) — <ORG> <WHT>
M101 (REEL MOTOR) — <YEL> <BLK>

To C CONTROL C.B PIN13
CON13 2 <BLU> 1 <BLK>
D123 CASSETTE LIGHT

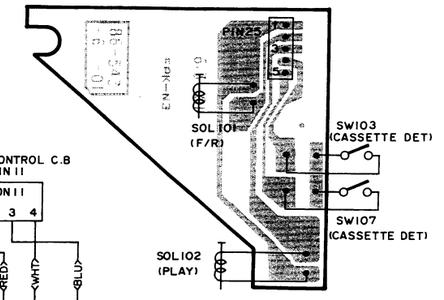
To C CONTROL C.B PIN12
CON12 1 <RED> 2 <WHT>
SOL103

P/R HEAD
E HEAD
<PNK> <WHT> <RED> <BLK>
CON27 (9 7 5 3 1)
To A MAIN-1 C.B PIN27
Lch <WHT> Rch <RED>
1~3 4~6
To B MAIN-2 C.B

M MECHANISM-1 C.B



N MECHANISM-2 C.B



To C CONTROL C.B PIN11
CON11 1 3 4
<BRN> <RED> <WHT> <BLU>
PD1 (TAKE UP)
PD2 (SUPPLY)

O AUTO STOP C.B

(C,E,K,K1,Z MODELS ONLY)

PT1 AUDIO
<BLU> <BLK>
CON1 1 <RED> 2 <BLK> 3 <RED>
To C CONTROL C.B PIN1

PT2 DIGITAL
<BLU>
CON3 1 <ORG> 2 <BLU> 3 <GRY>
To C CONTROL C.B PIN3
CON4 1 <RED> 2 <RED>
To C CONTROL C.B PIN4
CON15 1 <YEL> 2 <BRN> 3 <YEL>
To D DISPLAY C.B PIN4

<BLK> C116 SW108
SW108 POWER
C MODEL AC120V,60Hz
E,Z MODELS AC220V, 50/60Hz
K,K1 MODELS AC240V,50/60Hz

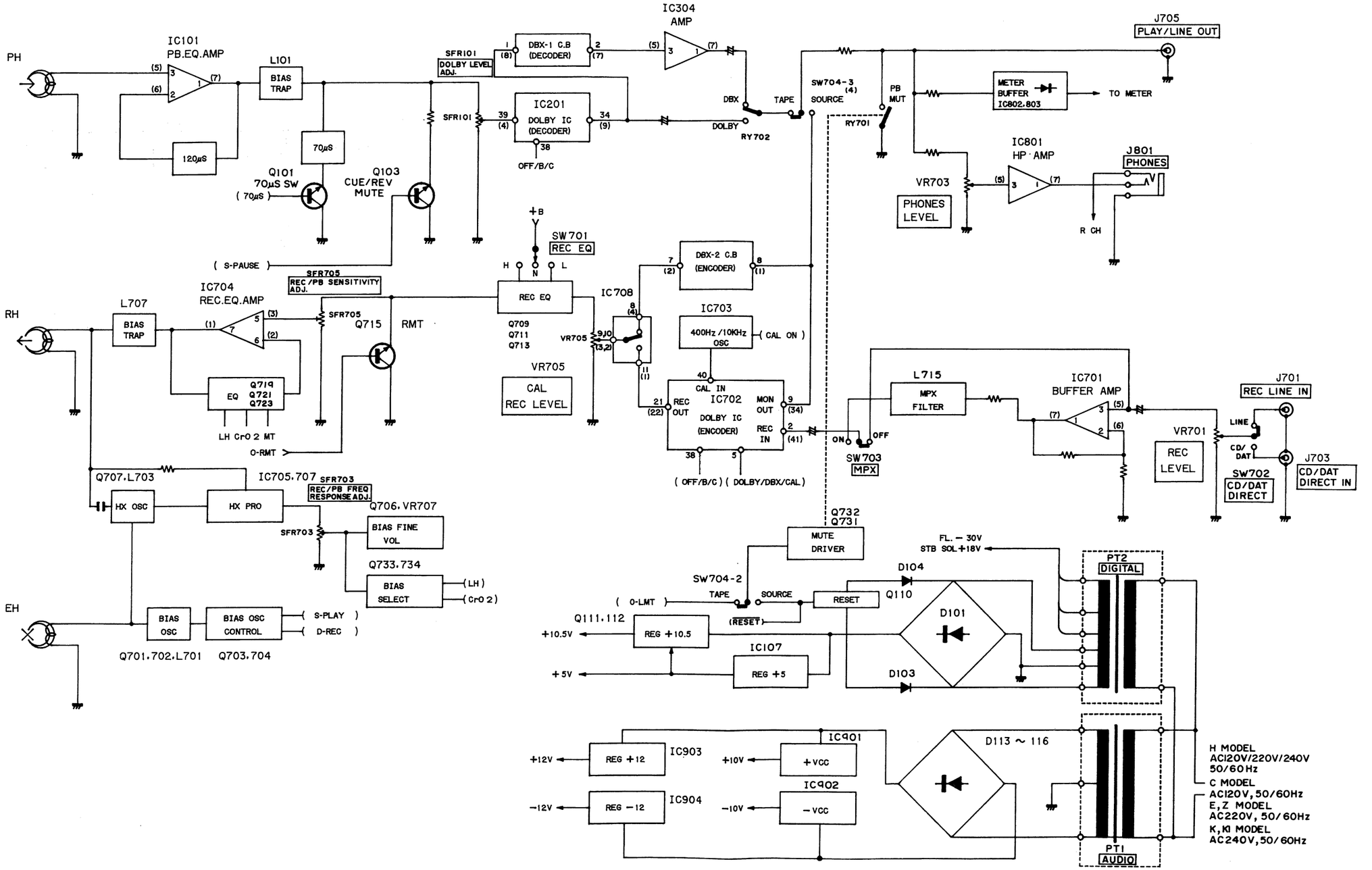
(H MODEL ONLY)

PT1 AUDIO
<YEL> <ORG> <WHT> <BLK>
CON1 1 <RED> 2 <BLK> 3 <RED>
To C CONTROL C.B PIN1

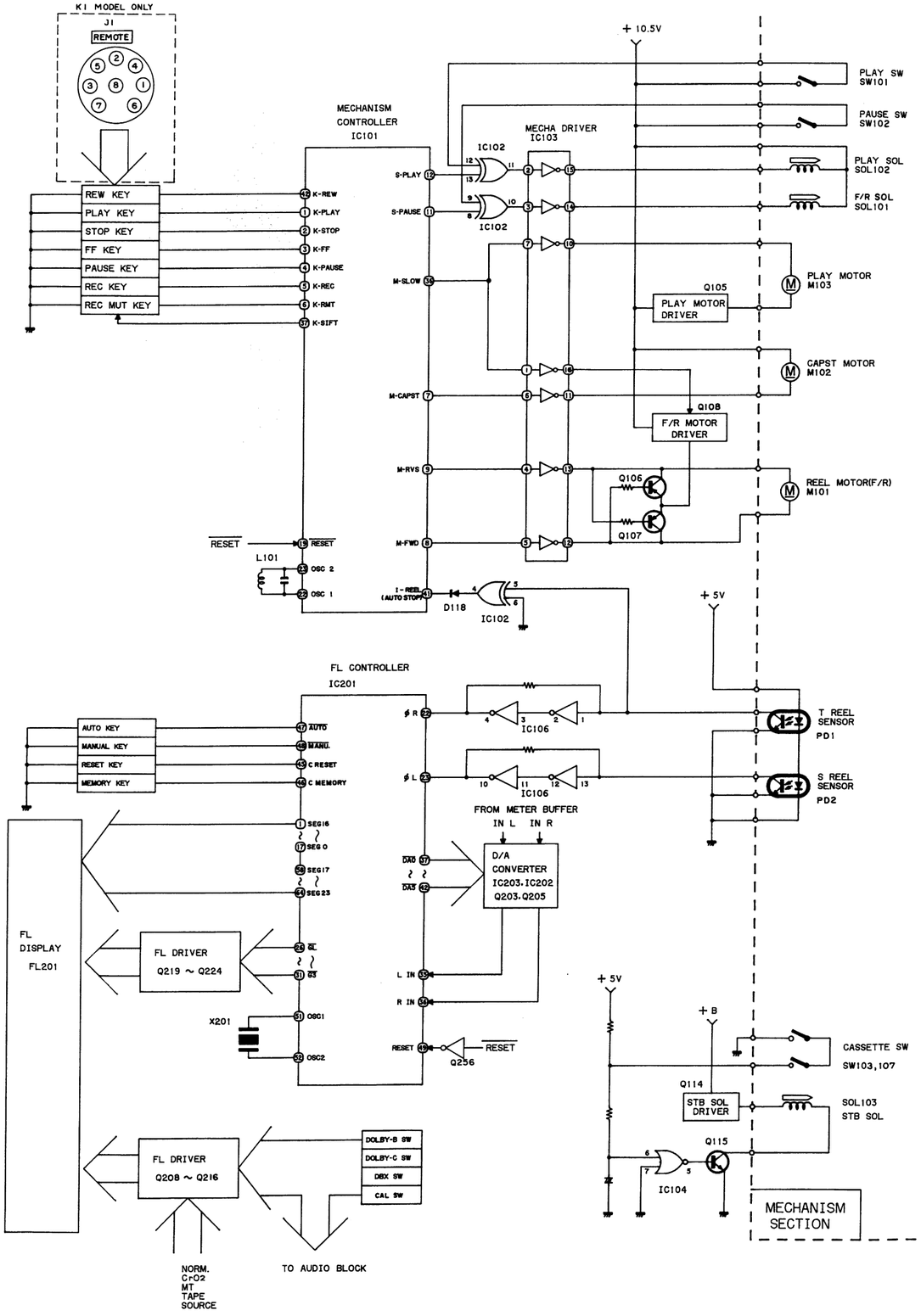
PT2 DIGITAL
<YEL> <ORG>
CON3 1 <ORG> 2 <BLU> 3 <GRY>
To C CONTROL C.B PIN3
CON4 1 <RED> 2 <RED>
To C CONTROL C.B PIN4
CON15 1 <YEL> 2 <BRN> 3 <YEL>
To D DISPLAY C.B PIN4

<BLK> C116 SW108
SW108 POWER
SW109 AC VOLTAGE
120V 220V 240V
<BLK> <BLK> AC120V/220V/240V 50/60Hz

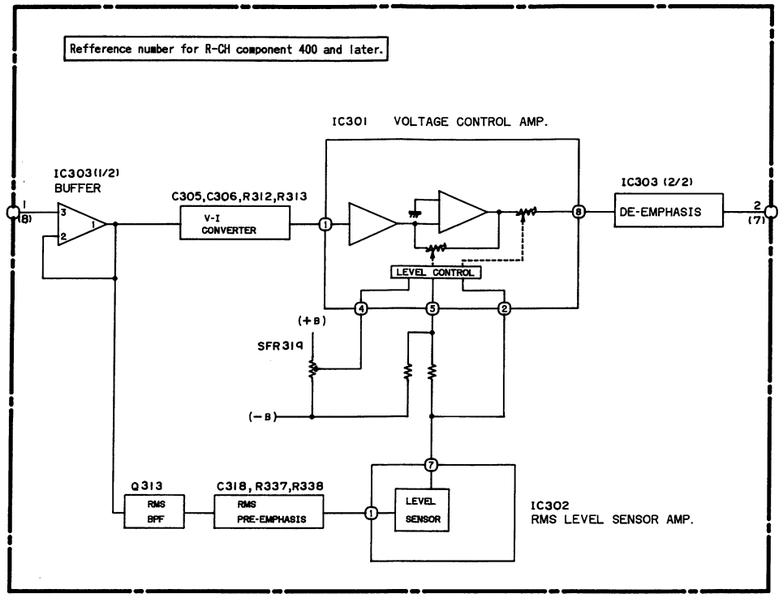
BLOCK DIAGRAM—1



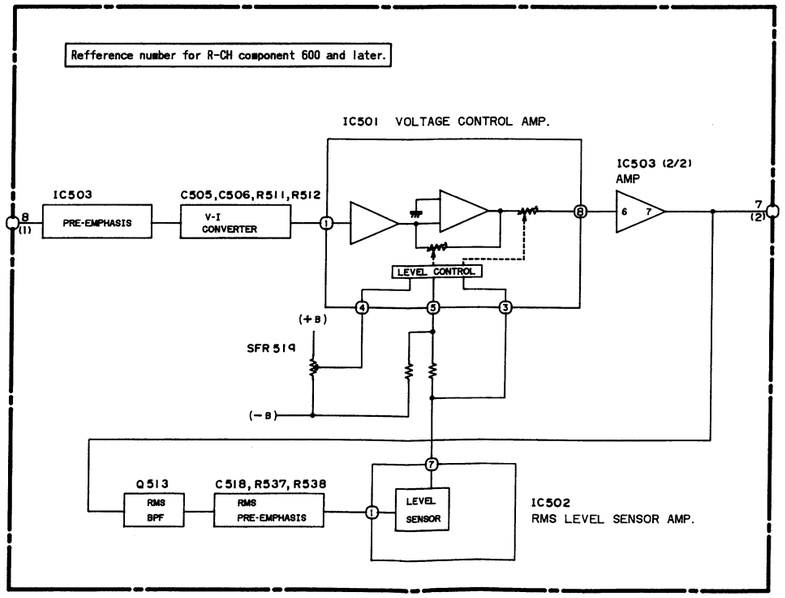
BLOCK DIAGRAM－2



DBX-1 C.B (DECODER)

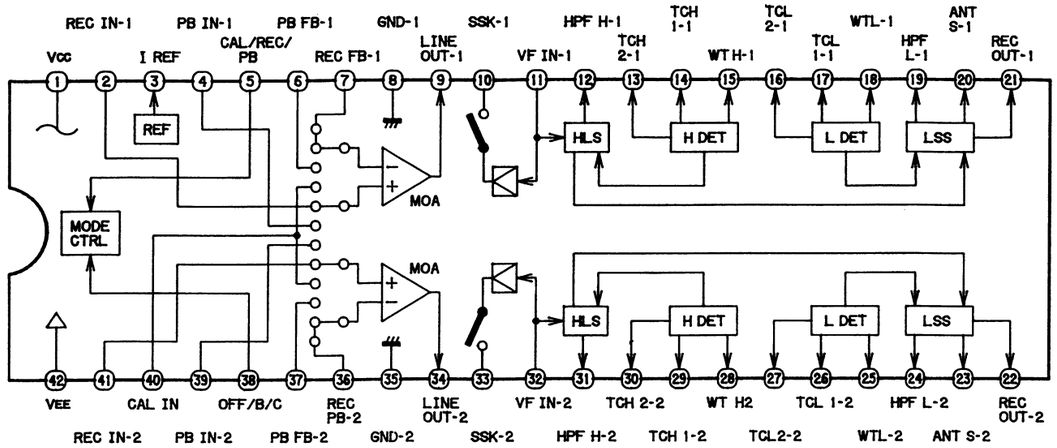


DBX-2 C.B (ENCODER)



IC BLOCK DIAGRAM

IC. CX20188



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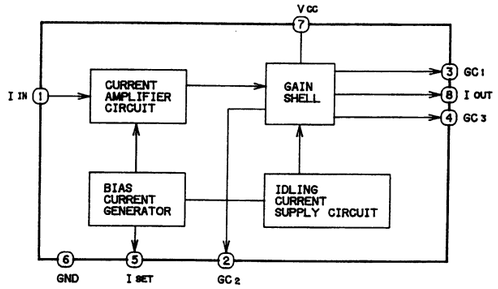

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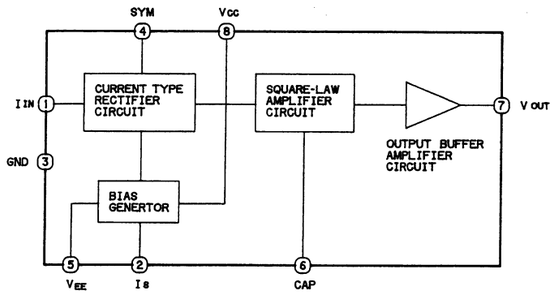
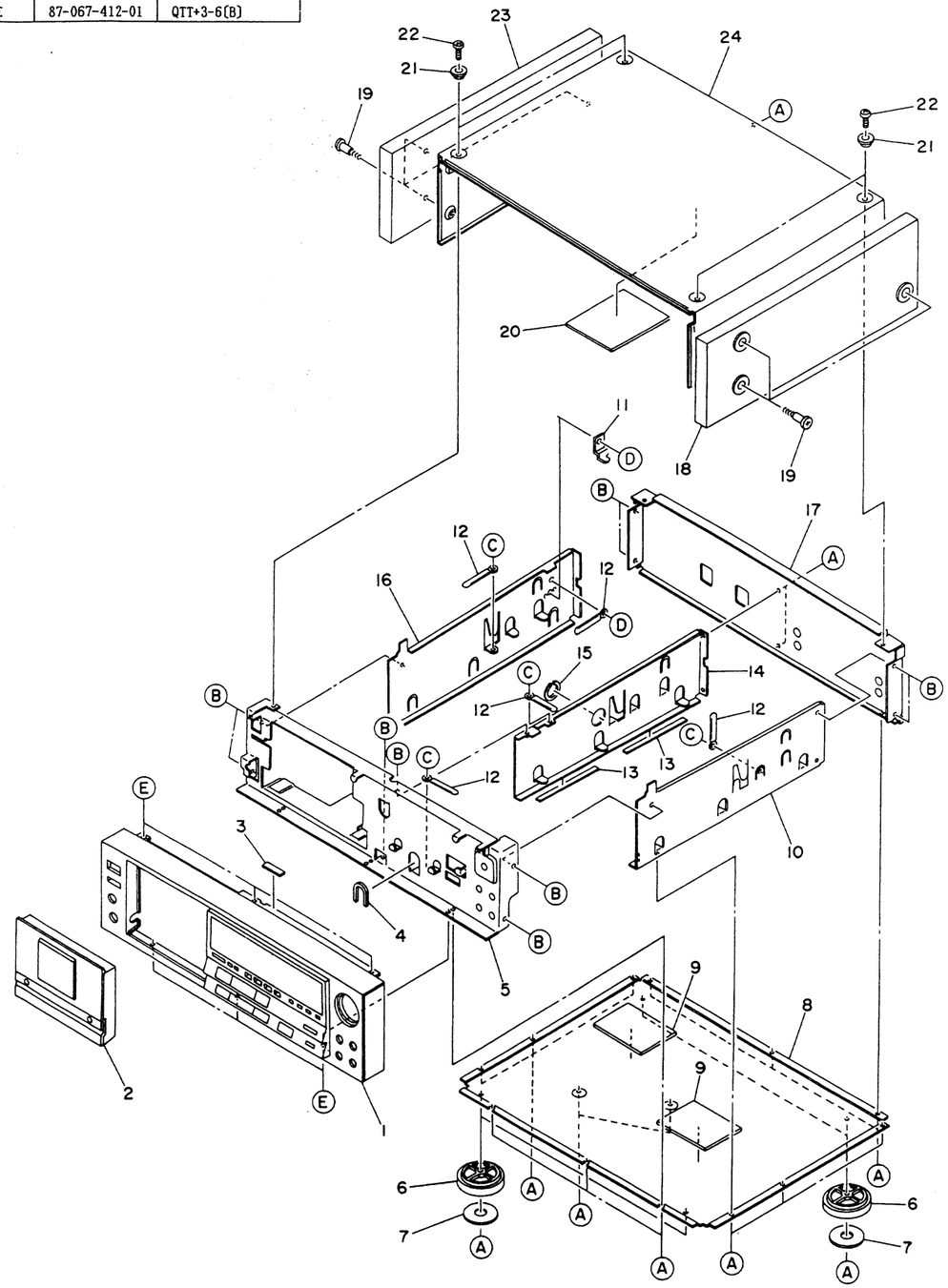


EXPLODED VIEW—1

REF.NO.	PART NO.	DESCRIPTION
A	87-067-277-01	UTT+3-6(B)
B	87-081-531-01	QTT+3-6
C	87-067-020-01	VTT+3-4
D	87-081-501-01	VTT+2.6-4
E	87-067-412-01	QTT+3-6(B)

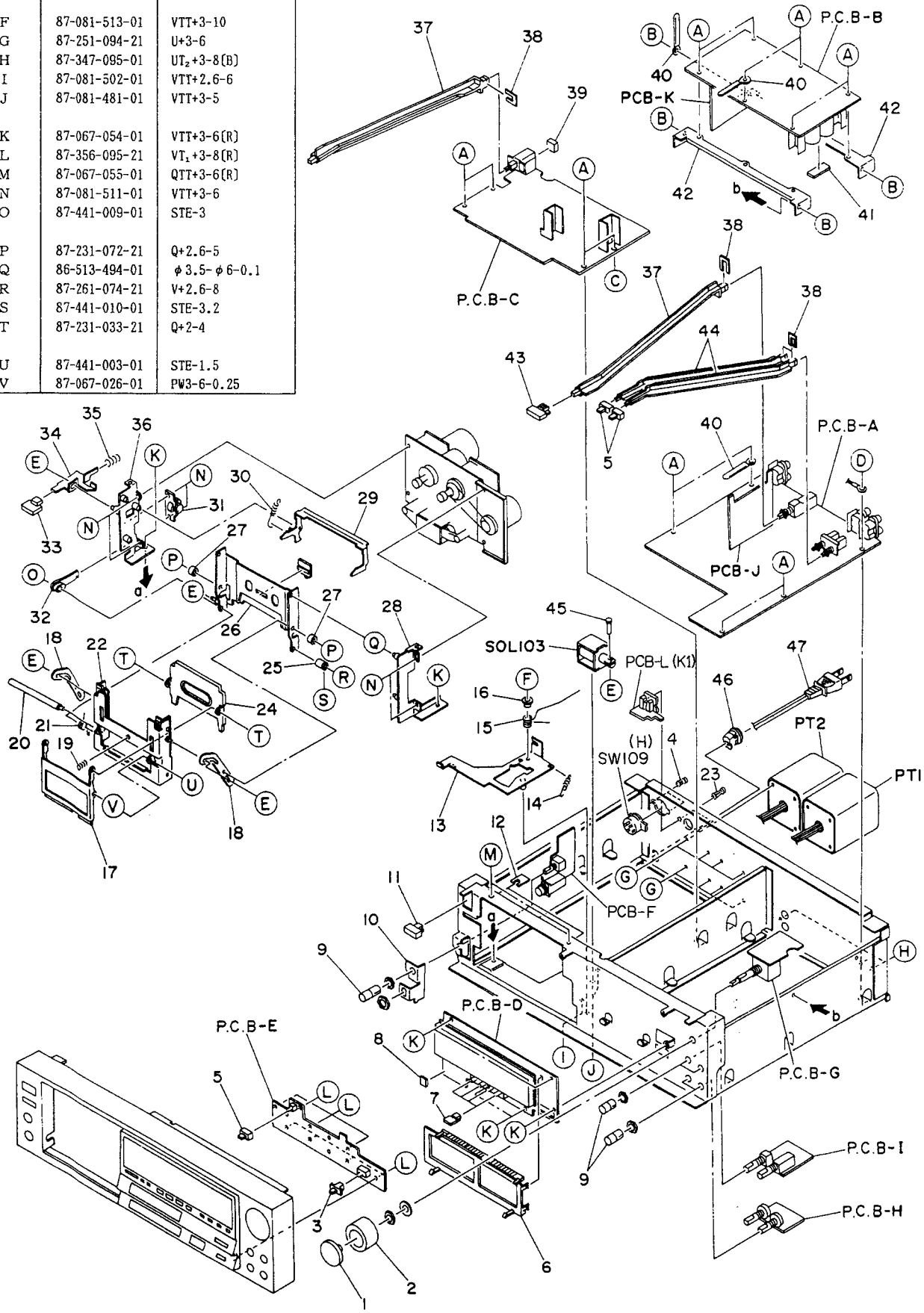


MECHANICAL PARTS LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	1-1	★09-047-381-010	FRONT CABINET ASSY	*	1
	1-2	09-047-382-010	CASSETTE BOX WINDOW ASSY	*	1
	1-3	★82-226-281-010	S CUSHION 8X28X2	*	1
	1-4	★82-226-276-010	BUSHING 61	*	1
	1-5	★82-226-201-010	FRONT CHASSIS ASSY	*	1
	1-6	★84-738-022-010	FOOT		4
	1-7	★84-731-027-010	FELT,FOOT		4
	1-8	★82-226-041-010	PLATE,BOTTOM (8D-1)	*	1
	1-9	★82-226-274-010	DAMPER 80-60-3	*	2
	1-10	★82-226-208-010	CHASSIS,SIDE R	*	1
	1-11	★87-137-209-010	HOLDER B (E,K,K1,Z ONLY)		1
	1-12	★87-038-039-010	WIRE BINDER		5
	1-13	---	SHEET 100X10X2		2
	1-14	★82-226-209-010	CHASSIS,SIDE C	*	1
	1-15	★82-226-277-010	BUSHING 102	*	1
	1-16	★82-226-207-010	CHASSIS,SIDE L	*	1
	1-17	★82-226-020-010	PANEL,REAR (H ONLY)	*	1
	1-17	★82-226-046-010	PANEL,REAR (C ONLY)	*	1
	1-17	★82-226-022-010	PANEL,REAR (E ONLY)	*	1
	1-17	★82-226-023-010	PANEL,REAR (K ONLY)	*	1
	1-17	★82-226-055-010	PANEL,REAR (K1 ONLY)	*	1
	1-17	★82-226-024-010	PANEL,REAR (Z ONLY)	*	1
	1-18	★82-226-009-010	PANEL,WOOD R	*	1
	1-19	★87-067-466-110	HEADER SCREW,M3		6
	1-20	★82-217-251-010	DAMPER 120-80		1
	1-21	★84-738-018-010	RING,TOP		4
	1-22	★87-067-510-010	HEADER SCREW,M3-8		4
	1-23	★82-226-008-010	PANEL,WOOD L	*	1
	1-24	★82-226-037-010	CABINET,STEEL	*	1

EXPLODED VIEW—2

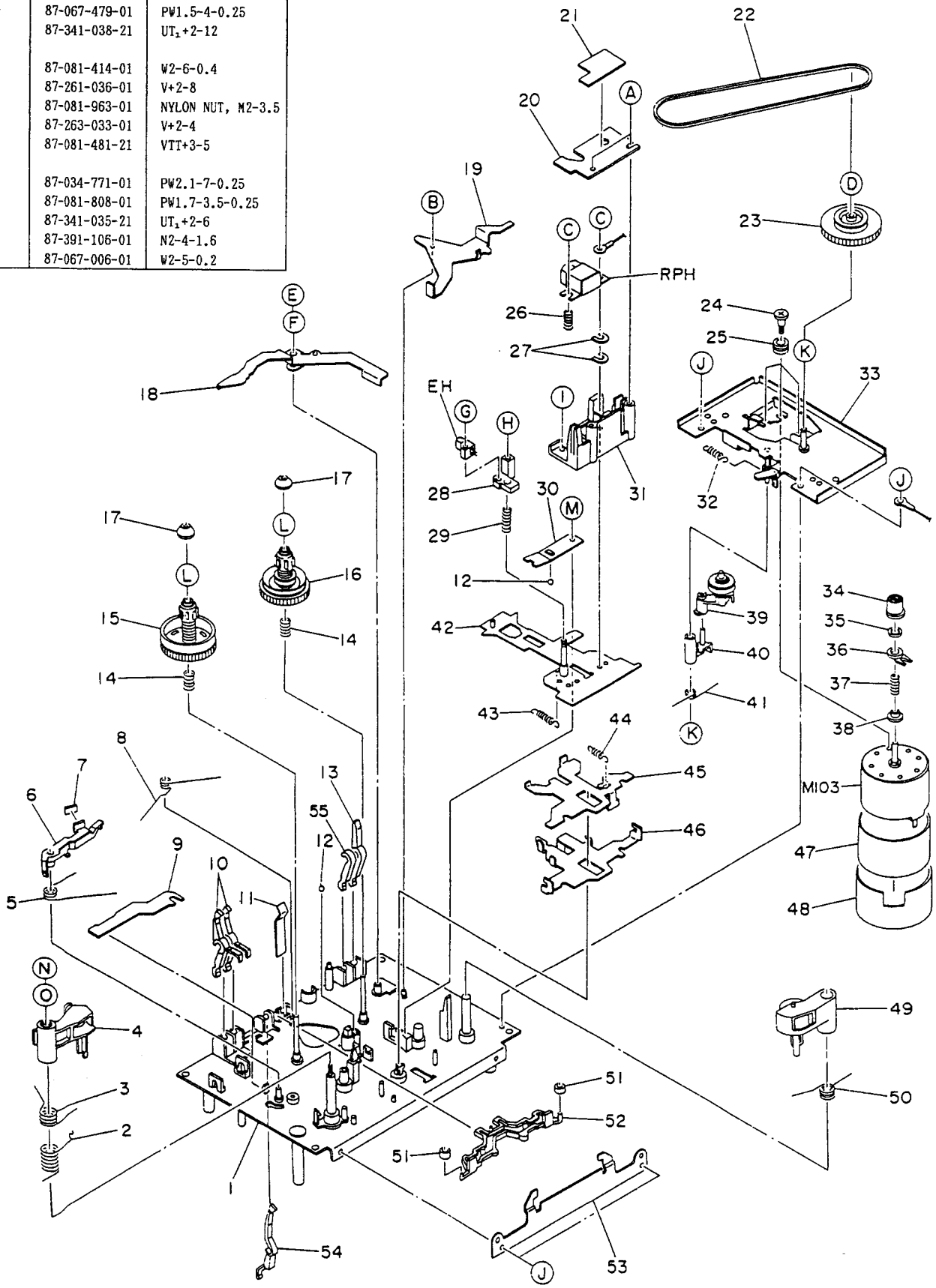
REF.NO.	PART NO.	DESCRIPTION
A	87-518-094-21	VFT_2+3-6(R)
B	87-081-531-01	QTT+3-6
C	87-067-065-01	FW3.2-8-0.25
D	87-521-094-21	VFT_2+3-6
E	82-190-206-01	STE-2
F	87-081-513-01	VTT+3-10
G	87-251-094-21	U+3-6
H	87-347-095-01	UT_2+3-8(B)
I	87-081-502-01	VTT+2.6-6
J	87-081-481-01	VTT+3-5
K	87-067-054-01	VTT+3-6(R)
L	87-356-095-21	VT_1+3-8(R)
M	87-067-055-01	QTT+3-6(R)
N	87-081-511-01	VTT+3-6
O	87-441-009-01	STE-3
P	87-231-072-21	Q+2.6-5
Q	86-513-494-01	φ3.5-φ6-0.1
R	87-261-074-21	V+2.6-8
S	87-441-010-01	STE-3.2
T	87-231-033-21	Q+2-4
U	87-441-003-01	STE-1.5
V	87-067-026-01	PW3-6-0.25



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	2-1	★84-738-009-010	KNOB VOLUME R ASSY		1
	2-2	★84-738-008-010	KNOB VOLUME L ASSY		1
	2-3	★84-732-010-010	KNOB,SLIDE TIME		1
	2-4	★87-085-090-010	NYLON RIVET 3-6.5 (H ONLY)		2
	2-5	★82-226-027-010	PUSH-BUTTON	*	3
	2-6	★82-226-212-010	HOLDER,FL	*	1
	2-7	★81-777-003-010	PUSH-BUTTON,TONE		4
	2-8	★82-598-247-110	RUBBER CUSHION 10X7X5		1
	2-9	★84-738-015-110	KNOB ROTARY ASSY		5
	2-10	★82-226-214-010	HOLDER,HEADPHONE	*	1
	2-11	★84-721-023-010	PUSH-BUTTON,POWER		1
	2-12	★82-226-234-010	SPACER U	*	2
	2-13	★82-226-260-010	LEVER PLUNGER ASSY	*	1
	2-14	★82-226-263-010	E-SPRING,LEVER	*	1
	2-15	★82-226-264-010	T-SPRING,LEVER	*	1
	2-16	★82-226-262-010	SHAFT,LEVER	*	1
	2-17	★82-226-244-010	LEVER,CASSETTE	*	1
	2-18	★82-226-236-010	LEVER,CASSETTE BOX	*	2
	2-19	★82-226-246-010	C-SPRING,CASSETTE	*	1
	2-20	★82-226-245-010	SHAFT,CASSETTE	*	1
	2-21	★82-226-232-010	T-SPRING,OPEN	*	1
	2-22	★82-226-237-010	CASSETTE BOX ASSY	*	1
	2-23	★87-084-063-010	NYLON RIVET 3-5.5 (K1ONLY)		2
	2-24	★09-047-345-010	PANEL STABILIZER ASSY	*	1
	2-25	★82-226-231-010	COLLAR,CASSETTE BOX R	*	1
	2-26	★82-226-042-010	CASSETTE PLATE ASSY	*	1
	2-27	★82-188-229-010	COLLAR,CASSETTE BOX L		2
	2-28	★82-226-218-010	MECHANISM HOLDER R ASSY	*	1
	2-29	★82-226-215-110	LEVER,EJECT	*	1
	2-30	★82-226-248-010	E-SPRING,EJECT LEVER	*	1
	2-31	82-179-228-010	OIL-DAMPER		1
	2-32	★82-541-240-110	LEVER,OIL-DAMP		1
	2-33	★82-226-025-010	PUSH-BUTTON,EJECT	*	1
	2-34	★82-226-229-010	PLATE,EJECT	*	1
	2-35	★82-226-249-010	C-SPRING,EJECT	*	1
	2-36	★82-226-216-010	MECHANISM HOLDER L ASSY	*	1
	2-37	★82-226-210-010	ROD B	*	2
	2-38	★82-385-383-110	STOPPER,ROD		4
	2-39	★82-226-251-010	G CUSHION 12X12X7	*	1
	2-40	★87-038-039-010	WIRE BINDER		3
	2-41	★82-226-273-010	DAMPER LR 10X30X3	*	2
	2-42	★82-226-204-010	SUB FRAME A	*	2
	2-43	★82-188-012-010	KNOB POWER		1
	2-44	★82-226-213-010	ROD A	*	2
	2-45	★82-226-268-010	SHAFT,PLUNGER	*	1
	2-46	★87-085-207-010	CORD BUSHING		1
	2-47	★87-034-761-010	AC CORD (H ONLY)		1
	2-47	★87-034-762-010	AC CORD (C ONLY)		1
	2-47	★87-034-759-010	AC CORD (E,Z ONLY)		1
	2-47	★87-034-760-010	AC CORD (K,K1 ONLY)		1

EXPLODED VIEW—3

REF.NO.	PART NO.	DESCRIPTION
A	87-342-035-21	VT_2+2-6
B	87-441-003-21	STE-1.5
C	87-081-543-01	U+2-9
D	87-067-479-01	PW1.5-4-0.25
E	87-341-038-21	UT_1+2-12
F	87-081-414-01	W2-6-0.4
G	87-261-036-01	V+2-8
H	87-081-963-01	NYLON NUT, M2-3.5
I	87-263-033-01	V+2-4
J	87-081-481-21	VTT+3-5
K	87-034-771-01	PW2.1-7-0.25
L	87-081-808-01	PW1.7-3.5-0.25
M	87-341-035-21	UT_1+2-6
N	87-391-106-01	N2-4-1.6
O	87-067-006-01	W2-5-0.2

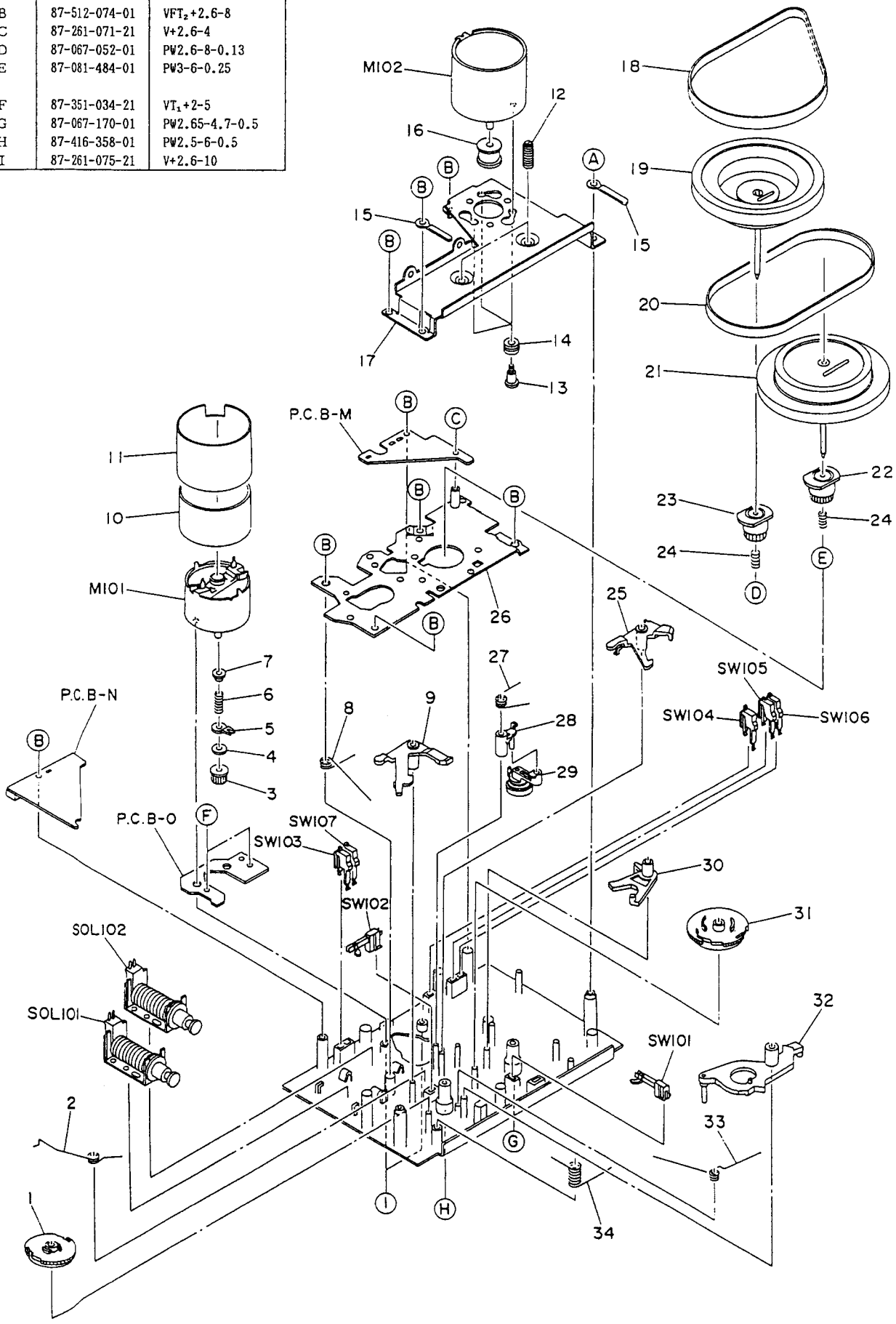


PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	3-1	★86-543-201-110	OUTSEAT ASSY		1
	3-2	★81-507-228-010	C-SPRING,PINCH LEVER S		1
	3-3	★81-507-217-110	T-SPRING,PINCH LEVER S		1
	3-4	81-507-207-310	PINCH LEVER S ASSY		1
	3-5	★81-507-223-010	T-SPRING,B.T		1
	3-6	★81-507-222-010	LEVER,BACK TENSION		1
	3-7	★81-505-237-010	FELT,SLIDE BRAKE		1
	3-8	★81-505-268-010	T-SPRING,SLIDE BRAKE		1
	3-9	★81-505-238-010	PLATE,EJECT BLOCKING		1
	3-10	★81-505-241-210	LEVER,CHROME REC BLOCKING		2
	3-11	★81-505-260-010	P-SPRING,CASSETTE PRESSURE		1
	3-12	87-073-005-010	STEEL BALL 2		2
	3-13	★81-505-364-010	LEVER,CASSETTE SENSOR 1		1
	3-14	★81-507-219-010	C-SPRING,S REEL PLATFORM		2
	3-15	86-543-240-010	REEL PLATFORM S ASSY		1
	3-16	86-543-216-010	REEL PLATFORM T ASSY		1
	3-17	★82-303-398-010	CAP,TAKE-UP REEL PLATFORM		2
	3-18	★81-505-307-010	LEVER,BRAKE EJECT		1
	3-19	★86-543-214-010	LEVER,IDLER EJECT		1
	3-20	★82-226-211-010	COVER,HEAD		1
	3-21	★82-226-049-010	LABEL 2,HEAD		1
	3-22	86-543-229-010	BELT,REEL		1
	3-23	★86-543-215-010	V PULLEY,IDLER		1
	3-24	★87-067-441-010	SCREW,MOTOR		3
	3-25	★87-087-029-010	RUBBER,CUSHION		3
	3-26	★86-543-224-010	C-SPRING,AZIMUTH		1
	3-27	★81-507-227-010	SPACER		2
	3-28	★86-543-204-110	HOLDER,EH		1
	3-29	★86-543-225-010	C-SPRING,EH		1
	3-30	★81-507-224-010	P-SPRING,ACTUATING CHASSIS		1
	3-31	★86-543-203-110	BASE,HEAD		1
	3-32	★86-543-227-010	E-SPRING,IDLER EJECT		1
	3-33	★86-543-205-010	HOLDER MOTOR ASSY C		1
	3-34	★81-505-320-010	PULLEY,REEL MOTOR B		1
	3-35	★81-505-328-110	FELT 4.5-7.2-10		1
	3-36	★81-505-287-110	LEVER,IDLER FR C		1
	3-37	★81-505-290-010	C-SPRING,FR IDLER C		1
	3-38	★81-505-289-010	PLATE,PRESSURE SPRING		1
	3-39	86-543-228-010	FR IDLER ASSY C		1
	3-40	★81-505-254-110	LEVER,IDLER FR A		1
	3-41	★86-543-222-010	T-SPRING,IDLER LEVER		1
	3-42	★86-543-211-010	ACTUATING CHASSIS ASSY		1
	3-43	★86-543-241-010	E-SPRING,ACTUATING CHASSIS B		1
	3-44	★81-505-266-010	E-SPRING,PLATE PAUSE		1
	3-45	★81-505-207-010	PLATE,PAUSE		1
	3-46	★81-507-220-010	PLATE,PINCH LEVER		1
	3-47	★81-505-606-010	SHIELD PLATE		1
	3-48	---	SHIELD PLATE B		1
	3-49	86-543-243-010	PINCH LEVER F ASSY		1
	3-50	★86-543-223-010	T-SPRING,PINCH T		1
	3-51	★81-507-229-010	G BRAKE		2
	3-52	★81-505-236-110	LEVER,SLIDE BRAKE		1
	3-53	★86-543-231-010	HOLDER,ACTUATING CHASSIS		1
	3-54	★81-505-242-110	LEVER,METAL		1
	3-55	★81-505-365-010	LEVER,CASSETTE SENSOR 2		1

Note) Cut the tip of 3-55 Lever Cassette Sensor 2 when using it for servicing.

EXPLODED VIEW−4

REF.NO.	PART NO.	DESCRIPTION
A	81-505-341-01	VFT+2.6-31.5
B	87-512-074-01	VFT_2+2.6-8
C	87-261-071-21	V+2.6-4
D	87-067-052-01	PW2.6-8-0.13
E	87-081-484-01	PW3-6-0.25
F	87-351-034-21	VT_1+2-5
G	87-067-170-01	PW2.65-4.7-0.5
H	87-416-358-01	PW2.5-6-0.5
I	87-261-075-21	V+2.6-10



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	4-1	★81-505-235-110	GEAR,PLATE CAM		1
	4-2	★81-505-269-010	T-SPRING,PLATE PINCH		1
	4-3	★81-505-320-010	PULLEY,REEL MOTOR B		1
	4-4	★81-505-328-110	FELT 4.5-7.2-10		1
	4-5	★81-505-287-110	LEVER,IDLER FR C		1
	4-6	★81-505-290-010	C-SPRING,FR IDLER C		1
	4-7	★81-505-289-010	PLATE,PRESSURE SPRING		1
	4-8	★81-505-271-110	T-SPRING,TRIGGER LEVER		1
	4-9	★81-505-233-010	LEVER,TRIGGER PAUSE		1
	4-10	★81-505-606-010	SHIELD PLATE		1
	4-11	81-505-608-010	SHIELD PLATE B		1
	4-12	★82-565-373-010	SCREW,THRUST		2
	4-13	★87-067-441-010	SCREW,MOTOR		3
	4-14	★87-087-029-010	RUBBER CUSHION		3
	4-15	---	WIRE BINDER		2
	4-16	★86-543-218-210	PULLEY,MOTOR 10.68		1
	4-17	★81-507-221-010	HOLDER,MOTOR		1
	4-18	86-543-230-110	BELT,MAIN		1
	4-19	86-543-238-110	FLYWHEEL T ASSY		1
	4-20	86-543-245-010	BELT B,RUBBER		1
	4-21	86-543-235-110	FLYWHEEL S ASSY		1
	4-22	★81-505-354-010	GEAR,FLYWHEEL 2.7		1
	4-23	★81-505-225-010	GEAR,FLYWHEEL F		1
	4-24	★81-505-261-010	C-SPRING,FLYWHEEL F		2
	4-25	★81-505-231-410	LEVER,TRIGGER PLAY		1
	4-26	★86-543-220-010	CHASSIS ASSY B		1
	4-27	★81-505-282-010	T-SPRING,FR IDLER		1
	4-28	★81-505-254-110	LEVER,IDLER FR A		1
	4-29	86-543-228-010	FR IDLER ASSY C		1
	4-30	★81-505-230-010	LEVER,PLAY		1
	4-31	★81-505-234-110	GEAR,PLAY CAM		1
	4-32	★81-505-308-010	LEVER,PAUSE B		1
	4-33	★81-505-272-010	T-SPRING,CAM		1
	4-34	★81-505-283-010	T-SPRING,LEVER PAUSE		1

■ ACCESSORIES/PACKAGE LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	1	★82-226-904-010	INSTRUCTION BOOKLET H	*	1
	2	★87-032-845-019	SIEMENS PLUG (H ONLY)		1
	3	★87-034-754-010	PIN CORD,AU-OFC		2